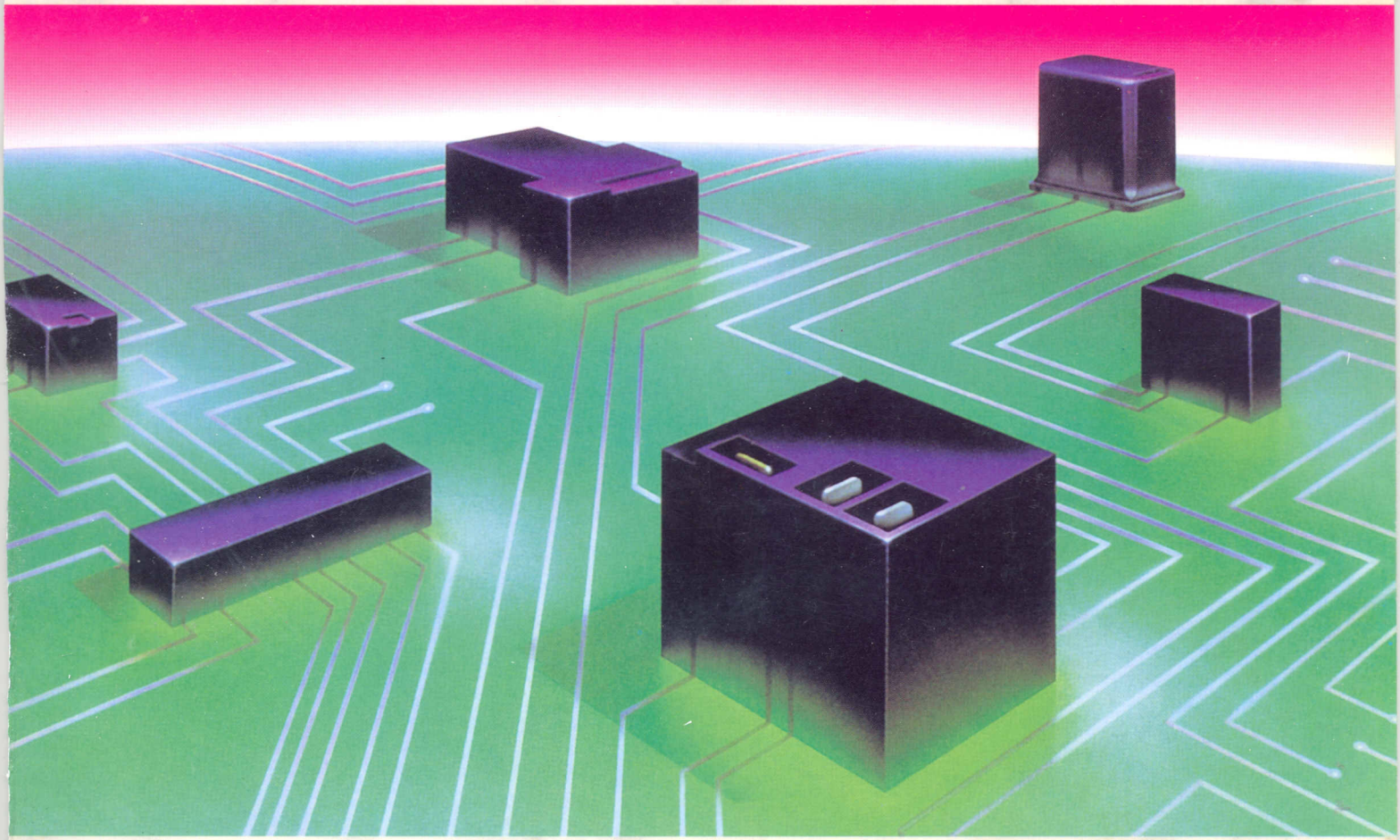
RELAY CATALOG



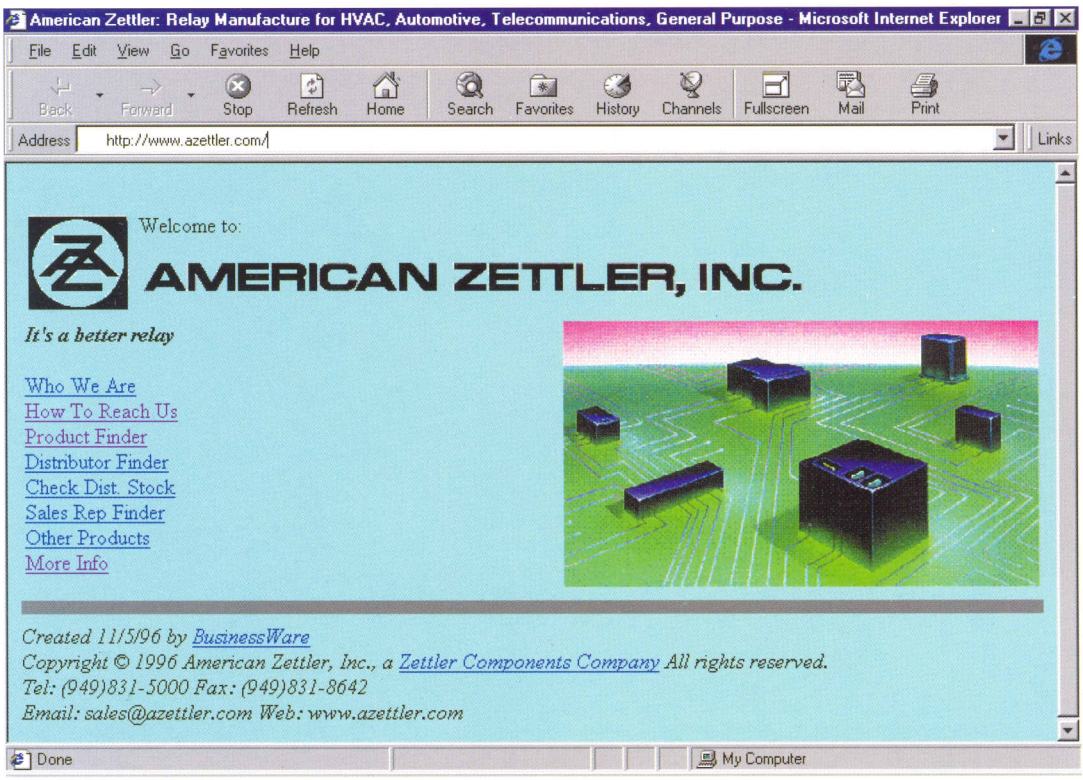
AMERICAN ZETTLER, INC.

IT'S A BETTER RELAY

Point your browser to:

http://www.azettler.com

World Wide Web



It is here that you will find...

Complete data sheets for all the relays you see in this Relay Catalog. These data sheets are in Adobe Acrobat PDF format. This means you can download and print at 600 dpi for crystal clear copy.

Autocad drawing files (in both Autocad and DXF format) of each relay's footprint and terminal layout so you can simply drop the drawing into your PCB layout drawing.

Full up-to-date listing of all our Sales Representatives and Distributors and the ability to check distributor stock.

Forms for requesting catalogs, data sheets and application information as well as a sign-up form for American Zettler's e-mail newsletter.

Table of Contents

Company History

Traditional craftsmanship and engineering excellence have long been the trademarks of American Zettler relays. For more than 100 years Zettler has established a worldwide reputation for superior performance in both technology and marketing services.

American Zettler, headquartered in California, produces over forty different types of relays to meet the many specific requirements of commercial and industrial applications. Because of their high reliability, American Zettler relays are used in a wide range of demanding applications including telecommunications systems, computer peripheral and office automation equipment, home appliances, security systems, test and measurement devices, industrial controls and many other types of electric and electronic equipment. To meet this demand off-the-shelf, American Zettler stocks over one million relays in all common coil resistances and contact configurations. In addition, American Zettler works closely with a computerized distribution network with stocking facilities in virtually every major industrial area in the world.

American Zettler's highly respected production capability is an industry unique blend of skilled craftsmen with state-of-the-art assembly equipment and techniques that result in a new standard of product reliability. To provide

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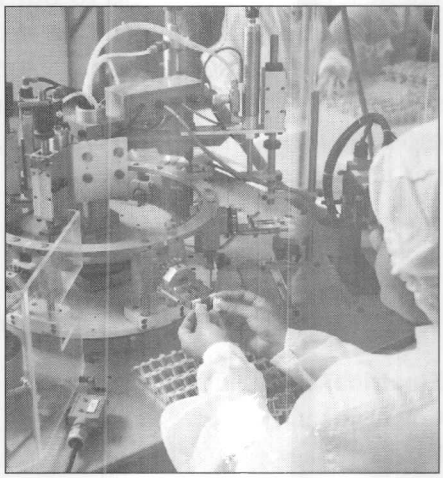
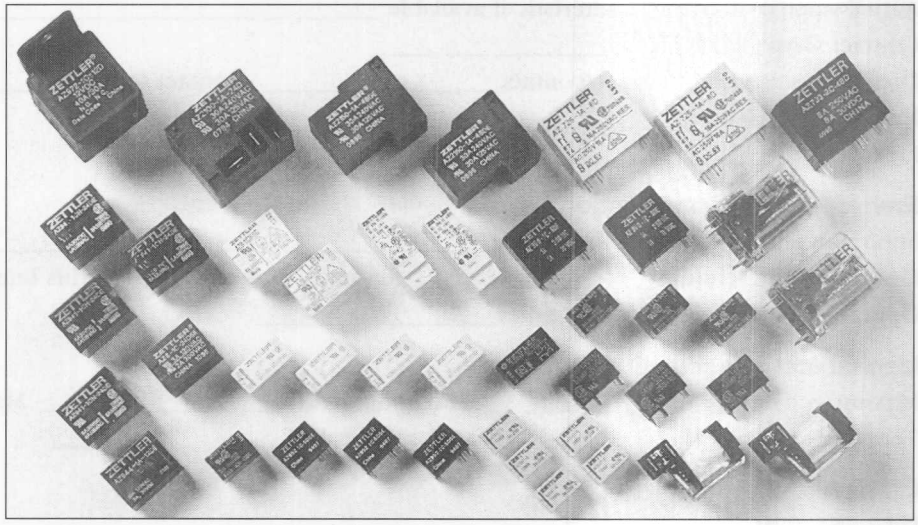
our customers with the best possible product, American Zettler has painstakingly developed the most sophisticated quality assurance program in the industry. The heart of this program is SPC—Statistical Processes Control. Through this and other advanced techniques, each and every relay is monitored and tested prior to shipment. In fact, this quality assurance program is so stringent that many of the leading high-tech companies rely upon it for their most demanding applications.



American Zettler's production capability is backed up by a staff of experienced engineers ready to help even the lowest volume customer select or design the proper relay for any application. No matter what the technical problem, competent help from a seasoned application specialist is only a phone call away.



American Zettler's unique combination of 100% quality testing, sales and technical support, cost-effective product design and product availability has earned customer loyalty worldwide. And once you've sampled American Zettler quality—we're convinced you'll agree that "It's a Better Relay."

Engineering Hotline

In-Depth Application Support

American Zettler understands how important application support is to today's customer. And that's why we have initiated our industry-unique Engineering Hotline. This easy-to-use fax-link gives you fast and direct access to our Technical Services Department with experience in a wide variety of applications ranging from consumer appliances to state-of-the-art telecommunication equipment and more. Plus, for your convenience, American Zettler has also included a "Spec-Check."

How to Use the Relay "Spec-Check"

The checklist below is provided to be used in conjunction with the Relay Selection Guide and Contact Selector Chart. By answering the questions below, you'll minimize your time and reduce the possibility of ordering a relay that will be less than optimum for your application.

Please consider only the pertinent requirements when specifying your relay. We can then offer those relays that best suit your needs at the lowest price or with the best delivery time, or sometimes both. Please indicate any special requirements.

Relay Spec-Check
24-Hour Engineering Fax-Link (949) 831-8642

Electrical Specifications: (at 20°C)

Coil resistance (nominal) _____ Tolerance _____

Pickup voltage or current _____ Dropout voltage or current _____

Coil voltage: Maximum _____ Nominal _____ Minimum _____

Special pickup or dropout requirements? Define: _____

Maximum switched voltage _____ Maximum switched current _____

Minimum switched voltage _____ Minimum switched current _____

Carry current _____ If AC load, power in VA _____

Load characteristics (i.e., resistive, inductive, tungsten, capacitive)? _____

Actual value of above characteristic if available _____

Contact form (1A, 2C, etc.) _____

Dielectric strength: Contact/contact _____ Contact to frame _____

Insulation resistance _____

Electrical life _____

Environmental Specifications:

Minimum and maximum temperature _____ _____

Operating temperature _____ Required pickup voltage at this temperature _____

Operating duty cycle (on to off time) _____

Mechanical Specifications:

Maximum length _____ Maximum width _____ Maximum height _____

Terminal style _____ Sealed or unsealed _____

Other Requirements:

U.L., CSA approvals required _____

Special Considerations: _____

(Low thermal EMF, special vibration or shock, specific operate or release times, bounce characteristics, etc.)

If Currently Using Relay:

Specific brand and part number _____, or AZ cross number _____

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Technical Definitions

ADJUSTMENT. The modification of any or all of the elements of tension shape or position of relay parts (to affect one or more of the operating characteristics or to meet mechanical requirements), for example, adjustments of armature gap, restoring spring force, contact gap, or contact force.

AMPERE-TURNS. The product of the number of turns in an electromagnetic coil winding and the current in amperes passing through the winding. With AC the RMS current value is generally used in the product of current and turns and is referred to as RMS ampere-turns.

ARMATURE. The moving magnetic member of an electromagnetic relay structure.

BIAS, MAGNETIC. A steady magnetic field (permanent magnet) applied to the magnetic circuit of a relay to aid or impede operation of the armature.

BOBBIN. A structure upon which a coil is wound.

BOUNCE, CONTACT. Internally caused intermittent and undesired opening of closed contacts or closing of open contacts of a relay, caused by one or more of the following:

(1) Impingement of mating contacts.
(2) Impact of the armature against the coil core on pickup or against the backstop on dropout.
(3) From momentary hesitation, or reversal of the armature motion during the pickup or dropout stroke.

BREAK. The opening of closed contacts to interrupt an electric circuit.

BRIDGING. (1) Normal bridging: the normal make-before-break action of a make-break or "D" contact combination. In a stepping switch the coming together momentarily of two adjacent contacts, by a wiper shaped for that purpose, in the process of moving from one contact to the next. (2) Abnormal bridging: the undesired closing of open contacts caused by metallic bridge or protrusion developed by arcing.

COIL. An assembly consisting of one or more windings, usually wound over an insulated iron core or on a bobbin or spool, or self-supporting, with terminals, and other required parts such as a sleeve or slug.

CONTACT. (1) The portion of current-carrying members at which electric circuits are opened or closed. (2) The current carrying part of a relay that engages or disengages to open or close electric circuits. (3) Used to denote a combination or set. ("Contacts" also used).

CONTACT, ARMATURE. (1) A contact mounted directly on the armature. (2) Sometimes used for a movable contact

CONTACT GAP. The gap between the contact tips (points), under specified conditions, when the contact circuit is open.

CONTACT FORCE. The force which two contact tips (points) exert against each other in the closed position under specified conditions.

CONTACT FOLLOW. The further specified movement of the contact tips (points) when making and after they have just touched and while they are travelling in the same direction as that of the moving contact member.

CONTACT WIPE. When a contact is making, the relative rubbing movement of contact tips (points) after they have just touched.

CONTACT, BIFURCATED. A forked, or branched, contacting member so formed or arranged as to provide some degree of independent dual contacting.

CONTACT, DRY CIRCUIT. A contact that carries current but neither opens nor closes while its load circuit is energized. Erroneously used if referring to low level contacts.

CONTACT, LOW LEVEL. Contacts that control only the flow of relatively small currents in relatively low-voltage circuits; for example, alternating currents and voltages encountered in voice or tone circuits, direct currents in the order of microamperes, and voltage below the softening voltages of record for various contact materials (that is 0.080 volt for gold, 0.25 volt for platinum, etc.). Also defined as contact switching loads where there is no electrical (arc transfer) or detectable thermal effect and where only mechanical forces can change the conditions of the contact interface.

CONTACT, MOVABLE. The member of a contact combination that is moved directly by the actuating system. This member is also referred to as the armature contact or swinger contact.

CONTACT, NORMALLY CLOSED. A contact combination which is closed when the armature is in its unoperated position. Contact, normally open. A contact combination that is open when the armature is in its unoperated position.

CONTACT, STATIONARY. A member of a contact combination that is not moved directly by the actuating system.

CONTACT WELD. A contacting failure due to fusing of contacting surfaces to the extent that the contacts fail to separate when intended to do so.

CONTACTOR. See relay, power.

DIELECTRIC STRENGTH. The maximum allowable AC RMS voltage (50/60 Hz) which may be applied between two specified test points.

DROPOUT, TO DROP OUT. A monostable relay drops out when it changes from an energized condition to the unenergized condition.

ENERGIZATION. The application of power to a coil winding of a relay. With respect to an operating coil winding use of the word commonly assumes enough power to operate the relay fully, unless otherwise stated.

FRAME. The main supporting portion of a relay, which may include parts of the magnetic structure.

GAP, ARMATURE. The distance between armature and pole face.

GAP, CONTACT. The distance between a pair of mating relay contacts when the contacts are open.

INSULATION RESISTANCE. The DC resistance between input and output of solid state relays and across contact and between contacts and coil for electromechanical and reed relays.

LOAD, CONTACT. The electrical power encountered by a contact set in any particular application.

MAKE. The closure of open contacts to complete an electric circuit.

MECHANICAL SHOCK NON-OPERATING. That mechanical shock level (amplitude, duration and wave shape) to which the relay may be subjected without permanent electrical or mechanical damage.

MECHANICAL SHOCK, OPERATING. That mechanical shock level (amplitude, duration, and wave shape) to which the relay may be subjected without electrical malfunction or mechanical damage.

OPERATING CHARACTERISTICS. Pickup, nonpickup, hold and dropout, voltage or current.

DROPOUT VALUE, MEASURED. As the current or voltage on an operated relay is decreased, the value at which all contacts restore to their unoperated positions.

DROPOUT VALUE, SPECIFIED. As the current or voltage on an operated relay is decreased, the value at or above which all relay contacts must restore to their unoperated positions.

HOLD VALUE, SPECIFIED. As the current or voltage on an operated relay is decreased, the value which must be reached before any contact change occurs.

NONPICKUP VALUE, SPECIFIED. As the current or voltage on an unoperated relay is increased, the value which must be reached before any contact change occurs.

PICKUP VALUE, MEASURED. As the current or voltage on an unoperated relay is increased, the value at which all contacts function.

PICKUP VALUE, SPECIFIED. As the current or voltage on an unoperated relay is increased, the value at or below which all contacts must function.

OVERTRAVEL, ARMATURE DROPOUT. The portion of the armature travel that occurs between closure of the normally closed contact(s) and the fully released static position of the armature.

OVERTRAVEL, ARMATURE PICKUP. The portion of the armature travel occurring between closure of the normally open contact(s) and the fully operated static position of the armature.

PICKUP, TO PICK UP. A monostable relay picks up when it changes from the unenergized condition to an energized condition.

POLE, DOUBLE. A term applied to a contact arrangement to denote that it includes two separate contact combinations, that is, two single-pole contact assemblies.

RATING, CONTACT. The electrical load handling capability of relay contacts under specified conditions and for a prescribed number of operations.

RELAY. An electrically controlled device that opens and closes electrical contacts to effect the operation of other devices in the same or another electrical circuit.

RELAY, ENCLOSED.

(1) **HERMETICALLY SEALED** A relay contained within an enclosure that is sealed by fusion or other comparable means to ensure a low rate of gas leakage. (Generally metal-to-metal or metal-to-glass sealing is employed.)
(2) **ENCAPSULATED** A relay embedded in a suitable potting compound
(3).**SEALED** A relay that has both coil and contacts enclosed in a relatively airtight cover
(4) **COVERED.A** relay contained in an unsealed housing. Note—The coil and contact assemblies may be separately enclosed and isolated from each other by various combinations of the above enclosures.

RELAY, LATCHING. A relay that maintains its contacts in the last position assumed without the need of maintaining coil energization.

(1) **MAGNETIC LATCHING.** A relay that remains operated, held by either remnant magnetism in the structure or by the influence of a permanent magnet, until reset. (See also relay, polarized bistable.)

RELAY, POLARIZED. A relay whose operation is dependent upon the polarity of the energizing current.

RELAY, BISTABLE A bistable polarized relay is a 2-position relay that will remain in its last operated position keeping the operated contacts closed after the operating winding is de-energized.

RELAY, POWER. A relay with heavy-duty contacts usually rated 15 amperes or higher. Sometimes called a contactor.

RELAY, REED. A relay using glass-enclosed magnetic reeds as the contact members .

RELAY, SENSITIVE. A relay that operates on comparatively low input power.

RESET. The return of contacts or a mechanism to the normal state.

RESISTANCE, CONTACT. The electrical resistance of closed contacts as measured at their associated contact terminals.

SENSITIVITY. Specified pickup expressed in watts.

TIME, CONTACT BOUNCE. The time interval from initial actuation of a contact to the end of bounce.

TIME, OPERATE. The time interval from coil energization to the functioning of the last contact to function. Where not otherwise stated, the functioning time of the contact in question is taken as its initial actuation time (that is, it does not include contact bounce time).

TIME, RELEASE. The time interval from coil de-energization to the functioning of the last contact to function. Where not otherwise stated, the functioning time of the contact in question is taken as its initial actuation time (that is, it does not include contact bounce time).

WIPE, CONTACT. The sliding or tangential motion between two mating contact surfaces as they open or close.

Technical Notes

INTRODUCTION

The technical notes section is divided into four basic parts: (1) general application guidelines; (2) guidelines for relay handling; (3) guidelines for selecting contact protection circuits; and (4) guidelines for selecting a temperature tolerant relay for your application.

In addition to the Technical Notes section, all data sheets in this catalog also include notes relevant to each specific relay. Please refer to these relay-specific notes, as they contain information vital to optimum relay performance.

If after reading these notes you still have questions on the selection, care, or application of American Zettler relays, please call our Technical Services Department at (949) 831-5000 or send a fax to (949) 831-8642 or E-mail to: sales@azettler.com.

SECTION I: GENERAL APPLICATION GUIDELINES

1. Avoid Abuse

As with any electro-mechanical device, relays are sensitive to abuse. To assure optimum performance, avoid dropping, hitting, or other unnecessary shocks to the relay.

2. Never Remove the Case

The case of a relay is an integral part of that relay. American Zettler relays are not designed to have the case detached. Never remove the case, as specifications or performance cannot be guaranteed.

3. Atmospheric Considerations

American Zettler recommends that you use unsealed relays in an atmosphere with only a minimum of dust and other contaminants. If a relay must withstand a harsh atmosphere, American Zettler recommends that you utilize a sealed relay.

4. Warning—Silicon Based Resins

Some silicon based resins can cause contact failure in a relay. The silicon based resin does not need to come in direct contact to cause damage—it just needs to be in close proximity. In cases where silicon based resins are used, it is recommended that a sealed relay be used.

5. Polarity

With polarized relays caution must be exercised, as failure to use the correct coil polarity can cause the relay to not operate. Always refer to the wiring diagram in the mechanical specifications for the correct connection.

6. Voltage

To assure meeting the electrical and performance characteristics, only the correct rated voltage should be applied to the coil, i.e., voltage sine waves only for AC coils, rectangular for DC coils.

7. Over-Voltage

Although typically a spike will not effect a relay's performance, the voltage on the coil should not continuously exceed the maximum allowable voltage.

8. Contact Current

Currents that exceed the designated values should be avoided.

9. Check Your Load and Conditions

The specifications provided in this catalog are "typical" specifications and are given only as guidelines. The performance of contacts vary depending on both the type of load and operating conditions encountered. Please consider your specific load and operating conditions in selecting the optimum relay for your application.

10. Warning—Ambient Temperature

The ambient temperature ranges, listed in the general specifications for each relay, must be followed to assure proper operation. Note: Both the storage and operating range differs for the sensitive and standard version of the same model. Refer to the data sheet of the relay for specific information.

11. Ultrasonic Cleaning

Never use any type of ultrasonic cleaning. Ultrasonic cleaning is always traumatic and is not recommended.

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12. Relay Operating Temperature

The relay operating temperature varies with ambient temperature, coil power dissipation, and contact dissipation. Ask about AZ's exclusive temperature rise computer program.

13. Pickup and Dropout Voltages

Both pickup and dropout voltages should be considered when selecting a relay coil voltage. For specific information, contact our Technical Services Department on the Engineering Hotline listed in this catalog.

14. Power Relays

When using power relays, avoid the use of single diode coil suppression. Use a zener and diode or a capacitor and resistor instead for longer contact life. Also, avoid storing relays in excessively humid conditions as moisture can affect performance in some cases.

SECTION II: GUIDELINES FOR RELAY HANDLING

American Zettler utilizes extensive quality control measures and takes extreme care in packaging to assure that the relays you receive are in the best possible operating condition. Once they enter your facility, some common sense care can prevent damage during handling. Some areas to closely monitor and supervise include:

1. Handling

• *Avoid handling relay terminals.*

Oils and contaminates common to the human hand can cause contamination of the surface finish which in turn can lead to solderability problems.

• *Always store relays at recommended temperatures.*

Observe maximum storage temperatures listed in the general specifications section of the data sheet for your specific relay.

• *Avoid misalignment of the terminal layout and P.C. board hole pattern.*

Even if there is just a slight misalignment, forcing a relay into the board can cause relay damage com promising such important factors as seal integrity, relay performance, and relay reliability.

• *Always store and handle relays in a clean environment.*

Your relays are state-of-the-art, electromechanical components and should be stored and handled as such. Even environmentally sealed relays have exposed terminals that are subject to contamination and therefore are minimally sensitive to their storage and production environment.

2. Mounting

• *Suggested PC board layout.*

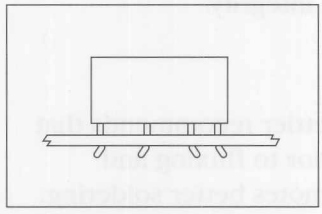
Refer to the PC board layout located on the data sheet for your specific relay.

• *For automatic insertion.*

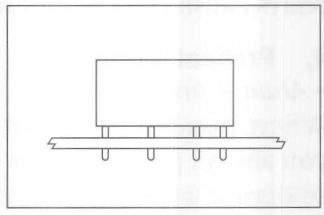
American Zettler relays are available packaged for a variety of automatic insertion machines. Please consult our Sales Department.

• *Never bend terminals.*

Once relay terminals are bent performance can no longer be guaranteed. Never bend terminals to make them self-clinching and avoid bending them to fit misaligned holes.



Incorrect. Bending the relay leads, for any reason, can cause failure.



Correct. Relay terminals remain straight, and penetrate completely through the PC board.

3. Flux Application

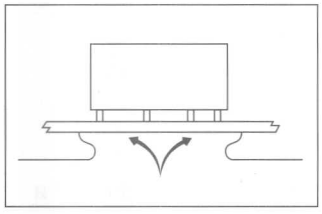
• *Examine your procedure.*

To assure minimum production trauma, thoroughly examine the fluxing procedure for the specific relay you are using. If the relay you have selected is not sealed, be particularly careful as unsealed relays are

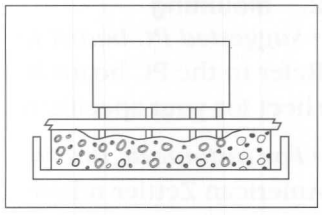
more susceptible to internal flux contamination, resulting in compromised performance and reliability.

• *Use rosin-based non-corrosive flux.*
This type of flux has been extensively tested and is the least hostile to the materials common to relays. If another type of flux is required or preferred, please consult with our Technical Services Department to determine compatibility.

• *Don't overflow the board.*
Adjust the PC board's position so that the flux doesn't overflow the top of the board. This is especially critical for unsealed relays as they are susceptible to contamination due to overflow flux (see diagram).



Correct. Solder flux circulates freely under the PC board, does not overflow.



Incorrect. Flux sponge method promotes flux contamination.

• *Avoid flux sponge method.*
Utilizing a flux sponge is not recommended. Often the downward pressure exerted on the relay and sponge is enough to force the flux into unsealed relays causing compromised integrity.

4. Preheating

• *Always preheat.*
Where possible, American Zettler recommends that you always preheat relays prior to fluxing and soldering, as preheating promotes better soldering. For unsealed relays preheating also helps prevent the penetration of flux into the relay during fluxing and soldering.

• *Recommended temperature and time.*
Recommended temperature and time for preheat is 100°C (212°F) or less for a duration of approximately 1 minute.

• *Don't overheat.*
Do not expose relays to high temperatures for long periods of time as it may affect relay characteristics. If you are in doubt about your specific procedure, please contact our Technical Services Department.

5. Automatic Soldering

• *Review Process.*
Like fluxing, automatic soldering can be traumatic to an unsealed relay. Always thoroughly review your soldering procedure in light of the relay you are utilizing, and check the thermal profile of the process with American Zettler's Technical Services Department.

• *Optimum method.*
The recommended method for automatic soldering is flow soldering. Always adjust the level of solder so that it does not overflow the printed circuit board.

• *Suggested automatic soldering temperature.*
Unless otherwise specified, a solder temperature of 270°C (518°F) is recommended.

• *Suggested automatic soldering time.*
Unless otherwise specified, a time period of approximately 5 seconds is recommended.

6. Hand Soldering

• *Soldering iron care.*
Always keep the tip of your soldering iron clean as contaminants on the iron can easily be transferred to the solder and inhibit conductivity.

• *Suggested hand soldering iron wattage.*
Suggested wattage range for your relay soldering iron is 30–60W.

• *Suggested hand soldering temperature.*
Unless otherwise specified, the suggested soldering temperature is approximately 300°C (572°F).

• *Suggested hand soldering duration.*
Unless otherwise specified, the suggested soldering duration should be approximately 3 seconds.

7. Relay Cooling

• *Air cooling.*
Prompt air cooling is recommended as it prevents deterioration of the relay due to soldering heat.

• *Cold liquids.*

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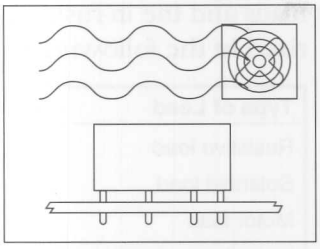
Although it is safe to totally immerse an environmentally sealed relay, it is better to avoid immersing a relay into cold liquids immediately after soldering.



Cooling method of choice is air cooling.

8. Cleaning

• *Sealed relays.*
Sealed relays can be safely cleaned by immersion. Select a suitable solvent by referring to the cleaning solvent compatibility chart. If you are considering a solvent not mentioned in this chart, contact our Technical Services Department for more information.

	Fluorinated	Aqueous	Chlorinated	Alcoholic
Solvent	Freon TF	Aqua Flux	Perclean B–5	IPA
Trade	Freon TE	#WL 1000	Perclean D	Ethanol
Names	Freon TES	Indusco 624	Cholorothene VG	
	Freon TMC	Indusco 1000	Cholorthene N	
	Alpha 1001	Lonco Terge 530	Chlorosolve	
	Alpha 1003	Hollis 310	Alpha 564	
			Trichcloroethan	

• *Avoid ultrasonic cleaning.*
Ultrasonic cleaning on relays may cause problems such as breaks in the coil or slight sticking of the contacts.

• *Unsealed relays.*
Never clean unsealed relays by immersion.

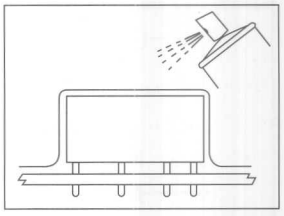
• *Relays with a removable tab.*
Relays with a removable tab should be vented after cooling to room temperature following cleaning and drying.

9. Coating

• *Unsealed relays.*
Never coat dust-cover or just flux resistant relays. Coating can penetrate the relay and in some cases cause contact failure. If board coating is required, mount the relay after coating.

• *Flexibility.*
Carefully check the flexibility specifications of the coating material you are planning to utilize because a coating that lacks the proper flexibility may peel off from thermal stress.

• *Coating selection.*
Some coating materials may have an adverse affect on certain types of relays. Select coating materials carefully and check the Coating/Relay Suitability chart.



Coating/Relay Suitability

Coating Type	Materials Compatibility	Advantages/ Disadvantages
Epoxy Based	Best	• Good electrical insulation • Does not affect contacts • Harder to apply
Urethane Based	Fair	• Easy to apply • Good electrical insulation • Possible solvent damage to case (check prior to use)
Silicon Based	Least	• Good electrical insulation • Easy to apply • Not suitable for unsealed relays—gas may cause failure

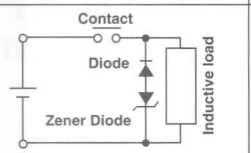
SECTION III: GUIDELINES FOR SELECTING CONTACT PROTECTION CIRCUITS

Proper selection is critical as the use of a contact protection device can extend contact life. When mounting the protection device, always locate it near the immediate area of the load or contact. Typically you should mount a protective device within 18 inches of the load or contact.

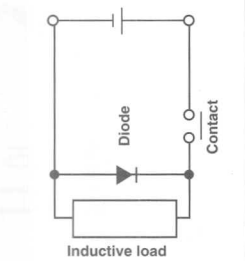
Typical contact protection circuits are provided for an overview but the circuit you are planning to utilize should be thoroughly examined. For more specific information on any of these circuits, contact our Technical Services Department.

Technical Notes

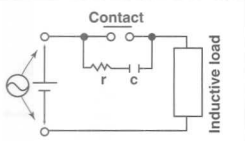
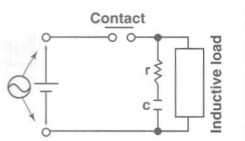
DIODE AND ZENER DIODE CIRCUIT

Diagram	Notes
	• DC applications only • Utilize when diode circuit causes too long release time • Use zener diode with zener voltage about equal to power supply voltage

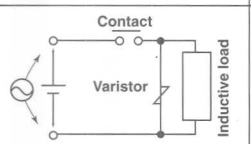
DIODE CIRCUIT

Diagram	Notes
	• DC applications only • Compared to RC type, circuit delays release time (2 to 5 times values stated in catalog). • For larger voltages, use diode with reverse breakdown 10 times circuit voltage and forward load circuit. • For smaller voltages, use reverse breakdown V of 2 to 3 times power supply voltage.

CR CIRCUITS

Diagram	Notes
	• Circuit A is suitable for AC or DC applications, but if used with AC voltage, impedance of the load should be smaller than the CR circuit's. Do not utilize for timer loads, as leakage current can cause faulty operations. • Circuit B is suitable for AC or DC. If the load is a relay or solenoid, release times lengthen. Effective when connected to both contacts, power supply voltage across the load is 100 to 200 V.
	

VARISTOR CIRCUIT

Diagram	Notes
	• Effective for AC and DC applications • Circuit slightly delays release time. Effective when connected to both contacts, power supply voltage across the load is 100 to 200 V.

• *In-Rush Current.*
The type of load and its in-rush current characteristics, together with switching frequency, can cause contact welding. For loads with in-rush current, measure the steady state current and in-rush current to determine the proper relay. Some typical types of loads and the in-rush current they create are summarized in the following chart:

Type of Load	In-rush Current
Resistive load	Steady state current
Solenoid load	10 to 20 times the steady state current
Motor load	5 to 10 times the steady state current
Incandescent lamp load	10 to 15 times the steady state current
Mercury lamp load	Approximately 3 times the steady state current
Sodium vapor lamp load	1 to 3 times the steady state current
Capacitive load	20 to 40 times the steady state current
Transformer load	5 to 15 times the steady state current

SECTION IV: GUIDELINES FOR SELECTING A TEMPERATURE TOLERANT RELAY

More and more applications require relays that operate at higher temperatures. Relays run "hot" due to high ambient temperatures and/or high contact switching current. These "hotter" environments can destroy a relay's insulation system and lead to product failure in the field.

To help prevent this type of failure, American Zettler has for several years, offered as a standard feature, UL Class B (130°C) insulating systems on its miniature power relays. These Class B relays have a significant "heat" advantage over Class A relays that, by contrast, only offer a rating of 105°C. Recently, American Zettler also introduced a new insulation system for its AZ8 and AZ2100 high current relays. This new system is designated by UL as Class F and it is rated at a full 155°C. This section outlines the reasons why an engineer should select a high temperature rated relay for his/her application.

First, let's define an insulation system as it pertains to this application note. An insulation system may be defined as simply any combination of insulating materials used in electrical equipment. In a relay it is the combination of a coil form, the magnet wire coating, and the outer wrapping of the relay coil.

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A proper insulating system is essential because it separates the control side of a relay (the coil) from the switching side of the relay (the contacts). The switch side of the relay may be used to switch high voltages that are potentially lethal to both humans and the circuitry that is connected to the coil side of the relay.

Consequently, when a relay is evaluated for a particular project it should be evaluated at the maximum ambient temperature it will see in that product. If the insulating system breaks down, it allows electrical current to flow from the switch side of the relay to the control side of the relay. This in turn causes failure and in some cases can present a safety hazard.

UL understands that time and temperature are the enemies of an insulating system. Just as paint on a house begins to peel with age and exposure to heat, an insulating system begins to break down with age and exposure to heat. Consequently, UL designated and administers a series of tests that assure that this breakdown does not occur even after aging and heating.

UL Document 1446 is concerned with systems of insulating materials. Insulating systems are classified by their ability to withstand elevated temperatures. It is from this document that we derive Class A, Class B, and Class F.

Table 3.1

Maximum Hot Spot Temperatures of Insulating Systems		
	Max. Hot Spot Temp.	
System Class	°C	°F
130 (B)	130	(266)
155 (F)	155	(311)
180 (H)	180	(356)
200 (N)	200	(392)
220 (R)	220	(428)
240 (S)	240	(464)
Over 240 (C)	Over 240	Over (464)

Table 3.1 is printed directly from the UL document. As it indicates, a Class B relay is rated for a maximum hot spot temperature of 130°C, and Class F relay is rated for a maximum hot spot temperature of 155°C. For a relay, the hot spot temperature is basically the coil temperature. The coil temperature is a result of the self-heating of the coil due to the power dissipation of the coil (coil voltage and current), heating due to the load being carried by the contacts (they get hot too and that leaks over to the coil), and by the ambient temperature of the environment.

At room temperature, most relay coils will not exceed a temperature of 130°C even with full contact load and continuous operation. However, if a particular circuit design calls for the relay to work in a high ambient temperature, or at a coil voltage higher than nominal (or both), it is possible that the coil temperature might exceed 130°C. Sometimes the designer does not realize this until the product gets to UL and at that point it is determined that a higher class of insulating system is required. If the Class B (rated up to 130°C) is not sufficient, Class F (rated up to 155°C) would be the next logical choice. Class F relays are proving to be ideal for applications such as:

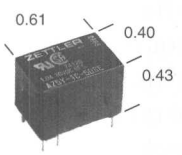
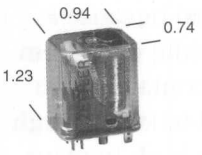
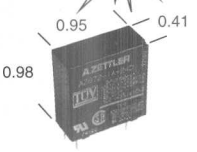
- Appliance Controls
- Automotive Controls
- Spa and Pool Controls
- Industrial controls

Plus, as power relays are used more and more in control applications, and boards get smaller and smaller allowing less room for heat dissipation, Class B and Class F relays become increasingly attractive.

To help circuit designers estimate the final coil temperatures of a relay when all factors are considered, the American Zettler Technical Services Department has developed an industry-unique computer program. This program runs on an IBM PC or a clone under Lotus 1-2-3 or Quattro Pro. Please call our Sales Department for details on how to get this program free of charge.

Relay Selection Guide

NEW

SERIES	AZ5	AZ8	AZ420	AZ672
				
FEATURES	• High sensitivity • Subminiature size • Low cost • Meets FCC Part 68.302 and 68.304	• High sensitivity (110 mW) • Class B (130°C) insulation standard • Class F (155°C) insulation available • VDE versions available	• Versatile contact configurations • Wide switching range • High sensitivity • Long life	• High dielectric strength, 4000 Vrms • Withstands surges up to 10,000 volts • High switching capacity in slim package
EPOXY SEALED	Yes	Yes	Yes	Yes
CONTACTS — **Form**	Form C	1 Form A, C	1–6 Form C	1 Form A
CONTACTS — **Ratings (Resistive)**	Standard duty: 1 A at 30 VDC 0.5 A at 120 VAC Heavy duty: 2 A at 30 VDC 1 A at 120 VAC	Light duty: 2 A at 28 VDC or 300 VAC Medium duty: 6 A at 28 VDC or 300 VAC Heavy duty: 10 A at 30 VDC or 120 VAC	2 A at 26 VDC or 115 VAC 3 A at 28 VDC or 115 VAC 7.5 A at 28 VDC or 115 VAC	10 A at 125 VAC 8 A at 30 VDC or 250 VAC TV-5 at 120 VAC 1/8 HP at 125 VAC or 277 VAC
COIL VOLTAGES	5 thru 24 VDC	5 thru 48 VDC	3 thru 115 VDC	3 thru 48 VDC
COIL POWER AT PICKUP VOLTAGE (typical)	Standard coils: 220 mW Sensitive coils: 100 mW	Standard coils: 210 mW Sensitive coils: 140 mW (110 mW available)	Standard coils: 450 to 850 mW Sensitive coils: 40 mW per pole (25 mW per pole available)	300 mW
DIELECTRIC STRENGTH (at sea level for 1 min.)	Contact to coil: 1250 Vrms Between open contacts: 500 Vrms	Contact to coil: 3000 Vrms Between open contacts: 750 Vrms	Contact to coil: 1500 Vrms Between open contacts: 1000 Vrms	Contact to coil: 4000 Vrms Between open contacts: 1000 Vrms Surge contact to coil: 10,000 V
TYPICAL LIFE — **Electrical** (At rated load unless otherwise specified)	Standard duty: 5×10^5 at 1 A at 30 VDC or 4×10^5 at 0.5 A at 120 VAC Heavy duty: 2×10^5 at 2 A at 30 VDC or 2×10^5 at 1 A at 120 VAC	LD: 3×10^5 operations MD: 1.8×10^5 operations HD: 1×10^5 operations	1×10^8 at 10 mA at 6 VDC 1.5×10^6 at 2 A at 28 VDC or 115 VAC 2×10^5 at 5 A at 28 VDC or 115 VAC 1×10^5 at 7.5 A at 28 VDC or 115 VAC	1×10^5 operation 3×10^4 tungsten
TYPICAL LIFE — **Mechanical**	1×10^7 operations	1×10^8 operations	5×10^8 operations	2×10^6 operations
APPROXMIATE SIZE IN INCHES L x W x H	0.61 x 0.40 x 0.43	0.84 x 0.64 x 0.58	2 pole: 0.94 x 0.74 x 1.23 4 pole: 1.17 x 0.74 x 1.23 6 pole: 1.40 x 0.74 x 1.23	0.95 x 0.41 x 0.98
TERMINALS — **PC**	THT	THT	THT	THT
TERMINALS — **Solder/Plug-in**	—	—	X	—
TERMINALS — **Bracket Mount**	—	—	—	—
TERMINALS — **Socket**	—	—	X	—
APPROVAL	UL/CSA	UL/CUR/VDE	UL/CUR	UL/CSA/TUV
PAGE NUMBER	36	38	40	48

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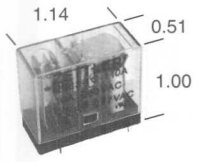
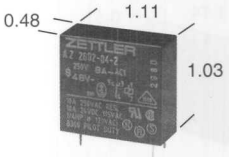
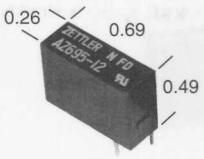
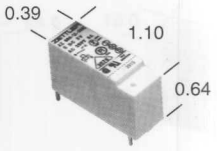
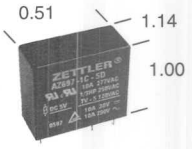
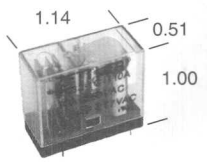
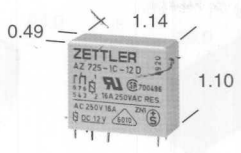
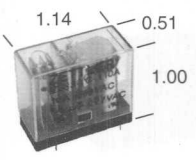
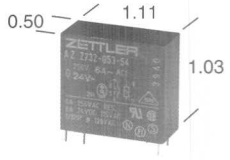
Relay Selection Guide

					
	AZ683	**AZ692/AZ693**	**AZ695**	**AZ696**	**AZ697**
	• High dielectric strength, 5000 Vrms • AC coils • Flux tight package • Isolation spacing greater than 8 mm	• High dielectric strength, 4000 Vrms • Complete list of international approvals • High switching capacity in slim package • Isolation spacing greater than 8 mm	• Utilizes only 0.18 sq. in. of PCB area • 5 Amp switching in miniature size • High dielectric strength, 4000 Vrms • High sensitivity	• Subminiature size • 10 Amp low profile • High sensitivity • Complete list of international approvals • High dielectric strength 4000 Vrms • Isolation spacing greater than 8 mm	• High dielectric strength, 5000 Vrms • High switching capacity • Class B (130°C) insulation standard • Isolation spacing greater than 8 mm
	No	Yes	Yes	Yes	Yes
	1 Form A or C	1 Form A, B, or C	1 Form A	1 Form A or C	1 Form A, C
	10 A at 250 VAC 1/2 HP at 277 VAC	10 A at 30 VDC or 250 VAC 1/4 HP at 120 VAC motor load B300 Pilot Duty	5 A at 30 VDC or 250 VAC 1/10 HP at 120 VAC	10 A at 30 VDC or 250 VAC 1/4 HP at 120 VAC 1/2 HP at 250 VAC B300 Pilot Duty Q300 Pilot Duty	TV–5 at 120 VAC 10A at 277 VAC or 30 VDC resistive 1/3 HP at 250 VAC 1/4 HP at 125 VAC NO 10 A at 250 VAC or 30 VDC
	6 thru 230 VAC	5 thru 48 VDC	5 thru 24 VDC	5 thru 48 VDC	3 thru 60 VDC
	0.72 VA	Standard coils: 337 mW Sensitive coils: 234 mW	100 mW	100 mW	257 mW
	Contact to coil: 5000 Vrms Between open contacts: 1000 Vrms	Contact to coil: 4000 Vrms Between open contacts: 1000 Vrms	Contact to coil: 3000 Vrms Between open contacts: 750 Vrms	Contact to coil: 4000 Vrms Between open contacts: 1000 Vrms	Contact to coil: 5000 Vrms Between open contacts: 1000 Vrms
	1 x 10^5 operation	1 x 10^5 operations at 10A at 30 VDC or 115 VAC 2 x 10^5 at 8 A at 250 VAC	1 x 10^5 at 5 A at 30 VDC or 250 VAC	1 x 10^5 operation	1 x 10^5 operation
	1 x 10^7 operations	3 x 10^7 operations	2 x 10^7 operations	1 x 10^7 operations	1 x 10^7 operations
	1.14 X 0.51 X 1.00	1.11 x 0.48 x 1.03	0.69 x 0.26 x 0.49	Form A: 1.10 x 0.39 x 0.64 Form C: 1.18 x 0.39 x 0.64	1.14 x 0.51 x 1.00
	THT	THT	THT	THT	THT
	—	—	—	—	—
	—	—	—	—	—
	—	X	—	—	X
	UL/CUR	UL/CSA/VDE	UL/CSA	UL/CSA/VDE	UL/CUR/TUV
	50	52	56	58	60

Relay Selection Guide

				
SERIES	**AZ723**	**AZ725**	**AZ726**	**AZ732**
FEATURES	• High dielectric strength, 5000 Vrms • AC coils • Isolation spacing greater than 8 mm • Flux tight package	• High dielectric strength, 5000 Vrms • Complete list of international approvals • 16 Amp switching capability in compact size • Isolation spacing greater than 8 mm	• High dielectric strength, 5000 Vrms • AC coils • Flux tight package •16 Amp switching capability in compact size • Isolation spacing greater than 8 mm	• High dielectric strength, 4000 Vrms • Complete list of international approvals • 10 Amp switching capability in compact size • Isolation spacing greater than 8 mm
EPOXY SEALED	No	Yes	No	Yes
CONTACTS — **Form**	2 Form A or C	1 Form A or C	1 Form A or C	2 Form A, B or C
CONTACTS — **Ratings (Resistive)**	5 A at 30 VDC or 250 VAC 1/3 HP at 240 VAC	16 A at 250 VAC	16 A at 250 VAC	10 A at 30 VDC or 277 VAC 1/8 HP at 120 VAC motor load
COIL VOLTAGES	6 thru 230 VAC	3 thru 60 VDC	6 thru 230 VAC	5 thru 48 VDC
COIL POWER AT PICKUP VOLTAGE (typical)	0.72 VA	270 mW	0.72 VA	Standard coils: 337 mW Sensitive coils: 250 mW
DIELECTRIC STRENGTH (at sea level for 1 min.)	Contact to coil: 5000 Vrms Between open contacts: 1000 Vrms	Contact to coil: 5000 Vrms Between open contacts: 1000 Vrms	Contact to coil: 5000 Vrms Between open contacts: 1000 Vrms	Contact to coil: 4000 Vrms Between open contacts: 1000 Vrms Contact set to contact set: 2500 Vrms
TYPICAL LIFE — **Electrical** (At rated load unless otherwise specified)	1 x 10^5 operations	1 x 10^5 operations	1 x 10^5 operations	1 x 10^5 at 8 A at 30 VDC, 2 x 10^5 at 8 A at 115 VAC or 6 A at 250 VAC
TYPICAL LIFE — **Mechanical**	1 x 10^7 operations	2 x 10^7 operations	1 x 10^7 operations	3 x 10^7 operations
APPROXMIATE SIZE IN INCHES L x W x H	1.14 x 0.51 x 1.00	1.14 x 0.49 x 1.10	1.14 x 0.51 x 1.00	1.11 x 0.50 x 1.03
TERMINALS — **PC**	THT	THT	THT	THT
TERMINALS — **Solder/Plug-in**	—	—	—	—
TERMINALS — **Bracket Mount**	—	—	—	—
TERMINALS — **Socket**	—	X	—	X
APPROVAL	UL/CUR	UL/CSA/VDE	UL/CUR	UL/CSA/VDE
PAGE NUMBER	62	64	66	68

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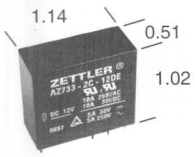
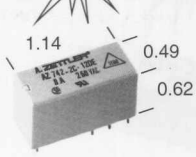
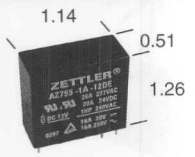
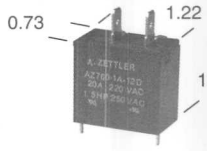
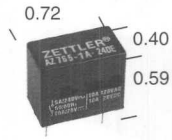
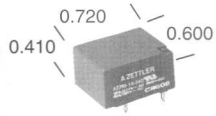
Relay Selection Guide

	AZ733	AZ733W	AZ742	AZ755	AZ760
		NEW 	NEW 		
	• High switching capacity • High dielectric strength, 5000 Vrms • Isolation spacing greater than 8 mm • Class B (130°C) insulation standard	• 1.5 mm contact gap • High switching capacity • High dielectric strength, 5000 Vrms • Isolation spacing greater than 8 mm • Class B (130°C) insulation standard	• High dielectric strength, 5000 Vrms • Isolation spacing greater than 10 mm • PTI/CTI >175 • Complete list of international approvals	• High switching capacity • High dielectric strength, 5000 Vrms • Isolation greater than 8 mm • Class B (130°C) insulation standard	• High in-rush capacity • Quick-connects for contacts • Class B (130°C) insulation standard
	Yes	Yes	Yes	Yes	No
	2 Form A and C	2 Form A	2 Form C	1 Form A 1 Form C	1 Form A
	10 A at 30 VDC or 250 VAC TV-3 at 125 VAC	10 A at 250 VAC 8 A at 30 VDC	8 A at 250 VAC 8 A at 30 VDC	20 A at 277 VAC (N.O.) 16 A at 240 VAC 12 A at 277 VAC 1 HP at 240 VAC TV–8 at 120 VAC 2 A at 24 VDC	20 A at 220 VAC 1.5 HP at 250 VAC
	3 thru 60 VDC	3 thru 60 VDC	5 thru 110 VDC	3 thru 60 VDC	6 thru 48 VDC
	257 mW	356 mW	190 mW	270 mW	441 mW
	Contact to coil: 5000 Vrms Between open contacts: 1000 Vrms Contact set to contact set: 3000 Vrms	Contact to coil: 5000 Vrms Between open contacts: 3000 Vrms Contact set to contact set: 3000 Vrms	Contact to coil: 5000 Vrms Between open contacts: 1000 Vrms Contact set to contact set: 3000 Vrms	Contact to coil: 5000 Vrms Between open contacts: 1000 Vrms	Contact to coil: 2000 Vrms Between open contacts: 1000 Vrms
	1 x 10^5 operations	1 x 10^5 operations	1 x 10^5 operations	1 x 10^5 operations	1 x 10^5 operations
	1 x 10^7 operations	1 x 10^7 operations	1 x 10^7 operations	1 x 10^7 operations	1 x 10^7 operations
	1.14 x 0.51 x 1.02	1.14 x 0.51 x 1.02	1.14 x 0.49 x 0.62	1.14 x 0.51 x 1.26	1.22 x 0.73 x 1.60
	THT	THT	THT	THT	THT
	—	—	—	—	—
	—	—	—	—	—
	X	—	—	X	—
	UL/CUR/TUV	UL/CUR/TUV	UL/CSA/VDE/SEV	UL/CUR/TUV	UL/CUR
	70	72	74	76	78

Relay Selection Guide

SERIES	AZ763	AZ764	AZ765	AZ766
				
FEATURES	• High dielectric strength, 5000 Vrms • Isolation spacing greater than 10 mm • PTI/CTI >250 • Complete list of international approvals	• High dielectric strength, 5000 Vrms • Isolation spacing greater than 10 mm • PTI/CTI >250 • Complete list of international approvals	• Small footprint • Low cost • 12 Amp switching capacity	• Low seated height • Low cost • Class B (130°C) insulation standard • 12 Amp switching capacity
EPOXY SEALED	Yes	Yes	Yes	Yes
CONTACTS — **Form**	1 Form C	1 Form C	1 Form A 1 Form C	1 Form A
CONTACTS — **Ratings (Resistive)**	12 A at 250 VAC 12 A at 30 VDC	16 A at 250 VAC 16 A at 30 VDC	10 A at 120 VAC 10 A at 28 VDC 5 A at 240 VAC	12 A at 125 VAC 10 A at 30 VDC or 277 VAC TV–5 at 120 VAC 1/4 HP at 125 / 250 VAC
COIL VOLTAGES	5 thru 110 VDC	5 thru 110 VDC	3 thru 24 VDC	3 thru 24 VDC
COIL POWER AT PICKUP VOLTAGE (typical)	190 mW	190 mW	253 mW	253 mW
DIELECTRIC STRENGTH (at sea level for 1 min.)	Contact to coil: 5000 Vrms Between open contacts: 1000 Vrms	Contact to coil: 5000 Vrms Between open contacts: 1000 Vrms	Contact to coil: 2500 Vrms Between open contacts: 1000 Vrms	Contact to coil: 2500 Vrms Between open contacts: 1000 Vrms
TYPICAL LIFE — **Electrical** (At rated load unless otherwise specified)	1 x 10^5 operations	1 x 10^5 operations	1 x 10^5 operations	1 x 10^5 operations
TYPICAL LIFE — **Mechanical**	1 x 10^7 operations	1 x 10^7 operations	1 x 10^7 operations	1 x 10^7 operations
APPROXMIATE SIZE IN INCHES L x W x H	1.14 x 0.49 x 0.62	1.14 x 0.49 x 0.62	0.72 x 0.40 x 0.59	0.72 x 0.60 x 0.41
TERMINALS — **PC**	THT	THT	THT	THT
TERMINALS — **Solder/Plug-in**	—	—	—	—
TERMINALS — **Bracket Mount**	—	—	—	—
TERMINALS — **Socket**	—	—	—	—
APPROVAL	UL/CSA/VDE/SEV	UL/CSA/VDE/SEV	UL/CSA/TUV	UL/CSA
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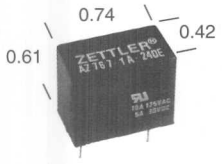
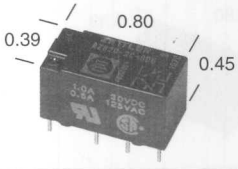
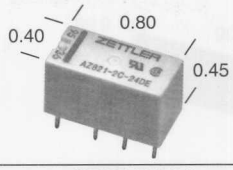
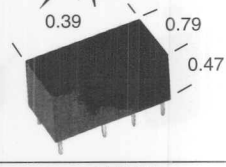
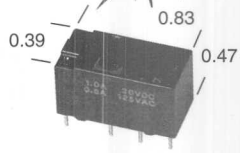
Relay Selection Guide

AZ767	AZ820	AZ821/831	AZ822	AZ826
			NEW 	NEW 
• Small footprint • Low cost • Class B (130°C) insulation standard • 10 Amp switching capacity	• Meets FCC Part 68.302 & 68.304 • Bifurcated PdAg contacts • Low profile • Fits standard 16-Pin IC socket	• High sensitivity (100 mW) • High switching capacity • Meets FCC Part 68.302 & 68.304 • Fits standard 16-Pin IC socket	• Ultra high sensitivity • Bifurcated contacts • Meets FCC Part 68.302 & 68.304 • Fits standard 16-Pin IC socket	• Low profile • 1 A at 120 VAC capacity • Low power consumpsion (200 mW) • Fits standard 16-Pin IC socket
Yes	Yes	Yes	Yes	Yes
1 Form A 1 Form C	2 Form C	2 Form C	2 Form C	2 Form C
1 Form A: 5 A at 30 VDC/250 VAC 10 A at 125 VAC 1 Form C: 3 A at 30 VDC or 250 VAC	1 A at 30 VDC or 60 VAC 0.5 A at 125 VAC	2 A at 30 VDC or 60 VAC 0.5 A at 125 VAC	1 A at 24 VDC 0.5 A 120 VAC	2 A 24 VDC 0.5 A at 125 VAC
3 thru 24 VDC	5 thru 48 VDC	3 thru 48 VDC	3 thru 48 VDC	3 thru 48 VDC
Standard: 253 mW Sensitive: 112 mW	250 mW	AZ821: 250 mW AZ831: 100 mW	74 mW	100 mW
Contact to coil: 2500 Vrms Between open contacts: 1000 Vrms	Contact to coil: 1000 Vrms Between open contacts: 1000 Vrms Contact set to contact set: 1500 Vrms	Contact to coil: 1500 Vrms Between open contacts: 1000 Vrms Contact set to contact set: 1000 Vrms	Contact to coil: 1500 Vrms Between open contacts: 1000 Vrms Contact set to contact set: 1000 Vrms Contact to coil surge: 1500 V	Contact to coil: 1000 Vrms Between open contacts: 500 Vrms Contact set to contact set: 1500 Vrms
1 x 10^5 operations	5 x 10^5 at 1 A at 30 VDC	1 x 10^5 at 2 A at 30 VDC	2 x 10^5 at 0.5 A at 120 VAC 5 x 10^5 at 1 A at 24 VDC	1 x 10^5 at 0.5 A at 125 VAC
1 x 10^7 operations	1 x 10^7 operations	1.5 x 10^7 operations	1 x 10^8 operations	1 x 10^7 operations
0.74 x 0.42 x 0.61	0.80 x 0.39 x 0.45	0.80 x 0.40 x 0.45	0.79 x 0.39 x 0.47	0.80 x 0.39 x 0.47
THT	THT	THT	THT	THT
—	—	—	—	—
—	—	—	—	—
—	—	—	—	—
UL/CUR	UL/CSA	UL/CUR/CSA	UL/CSA	UL/CUR
88	90	92	94	96

Relay Selection Guide

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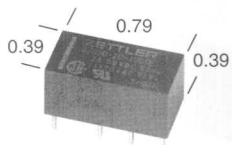

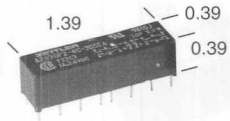

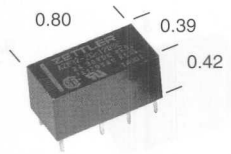

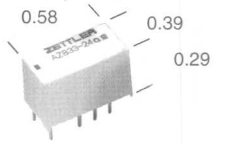

SERIES		AZ830/AZ830P	AZ830-4P/AZ830P-4P	AZ832/AZ832P	AZ833/AZ833P
FEATURES		• 2 Pole single side stable and two coil bistable (latching) versions • Meets FCC Part 68.302 & 68.304 • Bifurcated contacts • Fits standard 16-pin IC socket • High sensitivity (100 mW)	• 4 Pole single side stable and two coil bistable (latching versions) • Meets FCC Part 68.302 & 68.304 • Bifurcated contacts • Low profile DIP package • High sensitivity (100 MW)	• Low profile for compact board spacing • DC coils to 48 VDC • Single and dual coil latching versions • Meets FCC Part 68.302 & 68.303 • High switching capacity, 150 W, 250 VA	• Microminiature size • Non-latching and latching versions • Single and dual coil versions • Meets 2.5 kV surge (Bellcore TA-NWT-001089) • Meets FCC Part 68 (surge and dielectric) • Low power consumption: 140 mW
EPOXY SEALED		Yes	Yes	Yes	Yes
CONTACTS	Form	2 Form C	4 Form C	2 Form C	2 Form A
CONTACTS	Ratings (Resistive)	2 A at 30 VDC 1 A at 120 VAC	1 A at 30 VDC 0.5 A at 120 VAC	2 A at 25 VDC 1 A at 120 VAC	2.0 A at 30 VDC 0.5 A at 125 VAC
COIL VOLTAGES		5 thru 48 VDC	5 thru 48 VDC	AZ832: 3 thru 48 VDC AZ832P: 3 thru 24 VDC	3 thru 24 VDC
COIL POWER AT PICKUP VOLTAGE (typical)		Standard: 200 mW Sensitive: 100 mW	Standard coil: 200 mW (single side stable) Standard coil: 180 mW (bistable) Sensitive coil: 100 mW (single side stable Sensitive coil: 90 mW (bistable)	AZ832: 96 mW AZ832P: 42 mW	79 mW
DIELECTRIC STRENGTH (at sea level for 1 min.)		Contact to coil: 1500 Vrms Between open contacts: 1000 Vrms Contact set to contact set: 1000 Vrms	Contact to coil: 1500 Vrms Between open contacts: 1000 Vrms Contact set to contact set: 1500 Vrms	Contact to coil: 1500 Vrms Between open contacts: 1000 Vrms Contact set to contact set: 1500 Vrms	Contact to coil: 1800 Vrms Between open contacts: 1000 Vrms Contact set to contact set: 1000 Vrms
TYPICAL LIFE	Electrical At rated load unless otherwise specified	1 x 10^5 at 2 A at 30 VDC 1 x 10^5 at 1 A at 120 VAC 2 x 10^5 at 1 A at 30 VDC 2 x 10^5 at 0.5 A at 125 VAC	5 x 10^5 at 2 A at 30 VDC 2 x 10^5 at 0.5 A at 120 VAC	1 x 10^5 at 2 A at 30 VDC or 1 A at 125 VAC 2 x 10^5 at 1 A 30 VDC or 0.5 A at 125 VAC	1 x 10^5 at 0.5 A at 125 VAC 2 x 10^5 at 1.0 A at 30 VDC
TYPICAL LIFE	Mechanical	1 x 10^8 operations	1 x 10^7 operations	2 x 10^7 operations	1 x 10^8 operations
APPROXMIATE SIZE IN INCHES L x W x H		0.79 x 0.39 x 0.39	1.39 X 0.39 X 0.39	0.80 X 0.39 X 0.42	Through Hole (THT): 0.58 X 0.39 X 0.29 Surface Mount (SMT): 0.59 X 0.30 X 0.30
TERMINALS	PC	THT	THT	THT	THT/SMT
TERMINALS	Solder/Plug-in	—	—	—	—
TERMINALS	Bracket Mount	—	—	—	—
TERMINALS	Socket	—	—	—	—
APPROVAL		UL/CSA	UL/CSA	UL/CSA	UL/CSA
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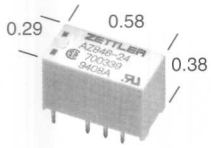
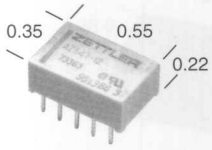
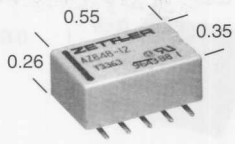
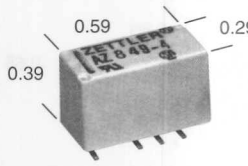
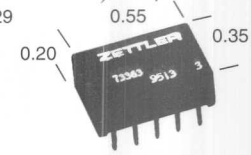
AZ846/AZ846P	AZ847	AZ848	AZ849	AZ850/AZ851
				
• 2 Pole single side stable and two coil bistable (latching) versions • Meets FCC Part 68.302 & 68.304 • Meets Bellcore 2.5 kV surge test • Low profile DIP package • Bifurcated contacts • High sensitivity (56 mW)	• 2 Pole single side stable and latching dual coil versions • Surface mount (SMT) • Microminiature size • Meets FCC Part 68.302 & 68.304, 1500 V surge • High sensitivity (70 mW)	• 2 Pole single side stable and latching (single and dual coil) versions • Surface mount (SMT) • Microminiature size • Meets FCC Part 68, 1500 V surge • High sensitivity (79 mW)	• 2 Pole single side stable and latching (single and dual coil) versions • Surface mount (SMT) • Microminiature size • Meets Bellcore 2500 V surge • High sensitivity (79 mW)	• Bistable (latching) versions available (THT only) • Microminiature size • Surface mount (SMT) • Meets FCC Part 68.302 • High sensitivity (79 mW)
Yes	Yes	Yes	Yes	Yes
2 Form C	2 Form C	2 Form C	2 Form C	2 Form C
2 A at 30 VDC 0.5 A at 125 VAC	2 A at 30 VDC 0.5 A at 125 VAC 0.3 A at 110 VDC	0.5 A at 125 VAC 2.0 A at 30 VDC 0.3 A at 110 VDC	0.5 A at 125 VAC 2.0 A at 30 VDC 0.3 A at 110 VDC	1 A at 30 VDC 0.5 A at 125 VAC
3.0 thru 24 VDC (single side stable 1.5 thru 24 VDC (bistable)	3 thru 24 VDC	1.5 thru 48 VDC	1.5 thru 48 VDC	3 thru 24 VDC
Standard coil: 79 mW (single side stable) Standard single coil: 56 mW (bistable) Standard dual coil: 113 mW (bistable)	Monostable coil: 70mw (3-12 VDC) 100 mW (24 VDC) Bistable (latching) two coil: 100 mW (3-12 VDC) 150 mW (24 VDC)	Non-latching: 79-169 mW Latching (1 coil): 57-85 mW Latching (2 coil): 113-170 mW	Non-latching: 79-169 mW Latching (1 coil): 57-85 mW Latching (2 coil): 113-170 mW	79 mW
Contact to coil: 1800 Vrms Between open contacts: 1000 Vrms Contact set to contact set: 1000 Vrms	Contact to coil: 1250 Vrms Between open contacts: 1000 Vrms Contact set to contact set: 1000 Vrms	Contact to coil: 1250 Vrms Between open contacts: 750 Vrms Contact set to contact set: 750 Vrms	Contact to coil: 1500 Vrms Between open contacts: 1000 Vrms Contact set to contact set: 1000 Vrms	Contact to coil: 1250 Vrms Between open contacts: 1000 Vrms Contact set to contact set: 1000 Vrms
2×10^5 at 1 A at 30 VDC 1×10^5 at 0.5 A at 125 VAC	2×10^5 at 0.5 A at 125 VAC 5×10^5 at 1.0 A at 30 VDC	2×10^5 at 0.5 A at 125 VAC 5×10^5 at 1.0 A at 30 VDC	2×10^5 at 0.5 A at 125 VAC 5×10^5 at 1.0 A at 30 VDC	1×10^5 at 0.5 A at 125 VAC 2×10^5 at 1 A at 30 VDC
1×10^8 operations	1×10^8 operations	1×10^8 operations	1×10^8 operations	1×10^8 operations
0.58 X 0.29 X 0.38	0.55 x 0.35 x 0.22	0.55 x 0.35 x 0.26	0.59 x 0.29 x 0.39	AZ850: 0.55 x 0.35 x 0.20 AZ851: 0.60 X 0.37 X 0.24
THT/SMT	THT	SMT	SMT	AZ850: THT/AZ851: SMT
—	—	—	—	—
—	—	—	—	—
—	—	—	—	—
UL/CSA	UL/CSA	UL/CSA	UL/CSA	UL/CSA
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Relay Selection Guide

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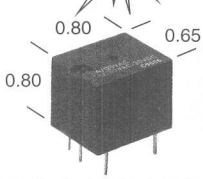

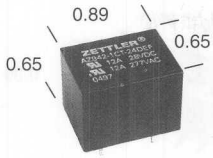

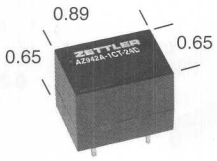

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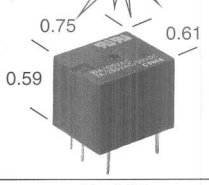

SERIES	AZ932	AZ942	AZ942A	AZ943
FEATURES	• Low seated height • 15 A switching in compact size • Sensitive coil	• High switching capacity • Extremely low cost • Class B (130°C) insulation standard • Class F (155°C) available • High dielectric strength	• High switching capacity, 20 Amps • Extremely low cost • Class F for high temperature operation • DC coils to 24 VDC • For automotive use	• Low seated height • Low cost • TV-5 rating • Class B (130°C) insulation standard
EPOXY SEALED	Yes	Yes	Yes	Yes
CONTACTS — Form	1 Form A 1 Form C	1 Form A 1 Form C	1 Form A 1 Form C	1 Form A or C
CONTACTS — Ratings (Resistive)	1 Form A: 15 A at 120 VAC TV-5 at 120 VAC 1 Form C: 10 A at 120 VAC	16 A at 250 VAC 12 A at 28 VDC or 277 VAC 1/3 HP at 125 VAC 2 A at 240 VAC Pilot Duty 16 A at 250 VAC	20 A at 250 VAC 20 A at 30 VDC	15 A at 125 VAC TV-5 at 120 VAC 10 A at 277 VAC
COIL VOLTAGES	3 thru 48 VDC	5 thru 48 VDC	6 thru 24 VDC	5 thru 48 VDC
COIL POWER AT PICKUP VOLTAGE (typical)	203 mW	230 mW	220 mW	203 mW
DIELECTRIC STRENGTH (at sea level for 1 min.)	Contact to coil: 1500 Vrms Between open contacts: 1000 Vrms	Contact to coil: 1750 Vrms Between open contacts: 1000 Vrms	Contact to coil: 1500 Vrms Between open contacts: 1000 Vrms	Contact to coil: 1500 Vrms Between open contacts: 1000 Vrms
TYPICAL LIFE — Electrical (At rated load unless otherwise specified)	1 x 10^5 operations	1 x 10^5 at 10 A at 277 VAC	1 x 10^5 operations	1 x 10^5 operations
TYPICAL LIFE — Mechanical	1 x 10^8 operations	1 x 10^7 operations	1 x 10^7 operations	1 x 10^7 operations
APPROXMIATE SIZE IN INCHES L x W x H	0.80 X 0.65 X 0.80	0.89 x 0.65 x 0.65	0.89 x 0.65 x 0.65	0.48 x 0.61 x 0.59
TERMINALS — PC	THT	THT	THT	THT
TERMINALS — Solder/Plug-in	—	—	—	—
TERMINALS — Bracket Mount	—	—	—	—
TERMINALS — Socket	—	—	—	—
APPROVAL	UL/CUR	UL/CUR/VDE	—	UL/CUR
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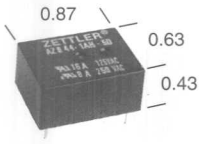

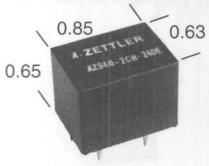

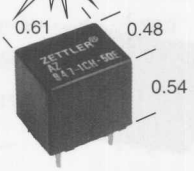

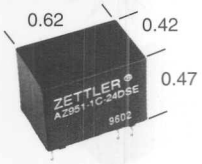

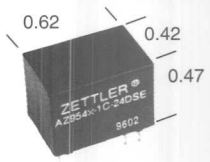

AZ944	AZ946	AZ947	AZ951/AZ952	AZ954
• High switching capacity (2000 VA) • High sensitivity (128 mW) • Low profile (under 1/2 inch) • DC coils up to 100 VDC	• Subminiature size • High sensitivity (288 mW) • Coils up to 24 VDC • Extremely low cost	• Subminiature size • High in-rush capability • 20 A switching in compact size • For automotive use	• Extremely low cost • Subminiature size for high density packaging • High sensitivity (116 mW) • High switching capacity	• Subminiature size for high density packaging • High sensitivity (114 mW) • Coil to 24 VDC • Extremely low cost
Yes	Yes	Yes	Yes	Yes
1 Form A 1 Form C	2 Form C	1 Form A or C	1 Form C	1 Form C
16 A at 125 VAC 10 A at 30 VDC 8 A at 250 VAC 1/4 HP at 125 VAC 1/10 HP at 277 VAC	5 A at 277 VAC 5 A at 30 VDC	20 A at 14 VDC (motor make) 6 A at 14 VDC (motor break)	1 A at 30 VDC or 125 VAC 5 A at 14 VDC or 125 VAC	2 A at 125 VAC 1 A at 240 VAC 1 A at 30 VDC
5 thru 100 VDC	3 thru 24 VDC	6 thru 24 VDC	5 thru 24 VDC	3 thru 24 VDC
1 Form A: 128 mW 1 Form C: 256 mW	288 mW	222 mW	Standard coil: 253 mW Sensitive coil: 116 mW	114 mW
Contact to coil: 1500 Vrms Between open contacts: 1000 Vrms	Contact to coil: 1000 Vrms Between open contacts: 750 Vrms Contact set to contact set: 1000 Vrms	Contact to coil: 500 Vrms Between open contacts: 500 Vrms	Contact to coil: 1250 Vrms Between open contacts: 750 Vrms	Contact to coil: 1250 Vrms Between open contacts: 1000 Vrms
1 x 10^5 operations	1 x 10^5 operations	1 x 10^5 operations	1 x 10^5 operations	1 x 10^5 operations
1 x 10^7 operations	2 x 10^7 operations	1 x 10^6 operations	1 x 10^7 operations	1 x 10^7 operations
0.87 x 0.63 x 0.43	0.85 x 0.63 x0.65	0.61 x 0.48 x 0.54	0.60 x 0.42 x 0.47	0.62 x 0.42 x 0.47
THT	THT	THT	THT	THT
—	—	—	—	—
—	—	—	—	—
—	—	—	—	—
UL/CUR	UL/CUR	—	UL/CUR	UL/CUR
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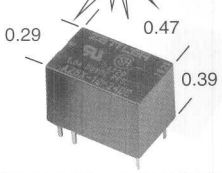
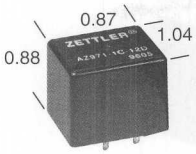
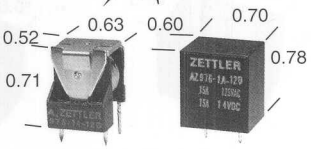
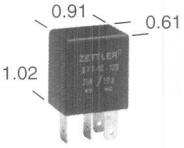
SERIES	AZ955	AZ970/AZ971	AZ975/AZ976	AZ977
	NEW		NEW	NEW
				
FEATURES	• Microminiature size • Designed for compact high density mounting • High sensitivity (85 mW) • Meets FCC Part 68.302 & 68.304	• Low cost • Open or sealed versions available • US & European footprints • Coils to 24 VDC • For automotive use	• 20 A switching in compact size • Small footprint • Open, covered or sealed • For automotive use	• 20 A switching in compact size • Small footprint • Low cost • For automotive use
EPOXY SEALED	Yes	Yes	Yes	Yes
CONTACTS — **Form**	1 Form C	1 Form A, B, C	1 Form A, B, C, U, V, or W	1 Form A or C
CONTACTS — **Ratings (Resistive)**	1 A at 30 VDC 0.5 A at 125 VAC	1 Form A: 40 A at 14 VDC 1 Form B: 30 A at 14 VDC 1 Form C: 30 A at 14 VDC	20 A at 10 VDC 15 A at 13 VDC	20 A at 14 VDC
COIL VOLTAGES	1.5 thru 24 VDC	6, 12, 24 VDC	6 thru 24 VDC	12 and 24 VDC
COIL POWER AT PICKUP VOLTAGE (typical)	85 mW	6 Volt: 573 mW 12 & 24 Volt: 514 mW	514 mW	534 mW standard 432 mW sensitive
DIELECTRIC STRENGTH (at sea level for 1 min.)	Contact to coil: 1250 Vrms Between open contacts: 500 Vrms Contact to coil surge: 1500 V	Contact to coil: 500 Vrms Between open contacts: 500 Vrms	Contact to coil: 500 Vrms Between open contacts: 500 Vrms	Contact to coil: 500 VDC Between open contacts: 500 VDC
TYPICAL LIFE — **Electrical** (At rated load unless otherwise specified)	1 x 10^5 operations	1 x 10^5 operations	1 x 10^5 operations	1 x 10^5 operations
TYPICAL LIFE — **Mechanical**	1 x 10^7 operations	5 x 10^7 operations	1 x 10^7 operations	1 x 10^6 operations
APPROXMIATE SIZE IN INCHES L x W x H	0.47 x 0.29 x 0.39	Open (AZ970): 0.96 x 0.95 x 0.72 Sealed (AZ971): 0.87 x 1.04 x 0.88	AZ975: 0.63 x 0.52 x 0.71 AZ976: 0.70 x 0.60 x 0.78	0.91 x 0.61 x 1.02
TERMINALS — **PC**	THT	THT	THT	—
TERMINALS — **Solder/Plug-in**	—	—	—	Quick connect
TERMINALS — **Bracket Mount**	—	—	—	—
TERMINALS — **Socket**	—	—	—	—
APPROVAL	UL/CUR	—	—	—
PAGE NUMBER	153	155	157	160

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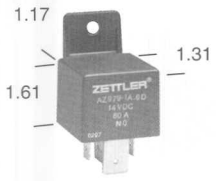
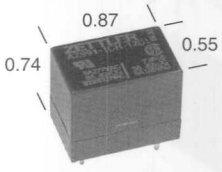
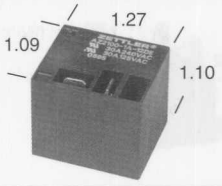
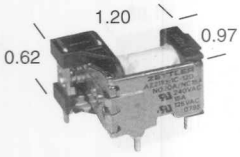
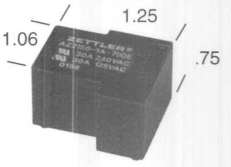
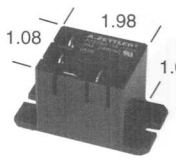
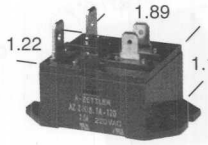
Relay Selection Guide

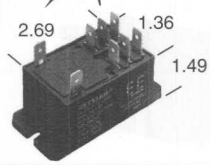
				
AZ979/AZ980	**AZ991**	**AZ2100**	**AZ2110/AZ2120**	**AZ2150**
• 80 Amp contact rating • High momentary current (500 A) • High operating temperature (80° C) • Quick connect terminals • For automotive use	• High switching capacity • Meets FCC Part 68.302 & 68.304 • 6.1 mm isolation	• Low cost per switched watt • UL 873 spacing • Class F (155°C) insulation available • 30 A Form C rating • Coils to 120 VDC	• Low cost per switched watt • UL 873 spacing • Class F (155°C) insulation available • 30 A Form C rating • Coils to 120 VDC	• Low cost per switched watt • UL 873 spacing • Class F (155°C) insulation available • 30 A Form C rating • Coils to 120 VDC
No	No	Yes	No	Yes
1 Form A 1 Form C	1 Form A, C	1 Form A, B, C	1 Form A, B, C	1 Form A, B, C
80 A at 14 VDC	1 Form A: Light duty: 3 A at 30 VDC or 277 VAC Medium duty: 5 A at 30 VDC or 277 VAC 1/10 HP at 277 VAC Heavy duty: 5 A at 30 VDC 10 A at 125 VAC	30 A at 277 VAC 1 HP at 125 VAC 2 HP at 240 VAC	30 A at 277 VAC 1 HP at 125 VAC 2 HP at 240 VAC	30 A at 277 VAC 1 HP at 125 VAC 2 HP at 240 VAC
12 and 24 VDC	5 thru 48 VDC	3 thru 120 VDC	3 thru 120 VDC	3 thru 120 VDC
680 mW	256 mW	500 mW	500 mW	500 mW
Contact to coil: 1500 Vrms Between open contacts: 1000 Vrms	Contact to coil: 2500 Vrms Between open contacts: 750 Vrms	Contact to coil: 2500 Vrms Between open contacts: 1500 Vrms	Contact to coil: 2500 Vrms Between open contacts: 1500 Vrms	Contact to coil: 2500 Vrms Between open contacts: 1500 Vrms
1 x 10^5 operations	1 x 10^5 operations	1 x 10^5 operations	1 x 10^5 operations	1 x 10^5 operations
1 x 10^7 operations	1 x 10^7 operations	1 x 10^7 operations	1 x 10^7 operations	1 x 10^7 operations
AZ979: 1.17 x 1.31 x 1.61 AZ980: 1.17 x 1.17 x 0.98	0.87 x 0.55 x 0.74	1.27 x 1.09 x 1.10	1.20 x 0.97 x 0.62	1.25 x 1.06 x 0.75
—	THT	THT	THT	—
0.375 Quick connect	—	Quick-Connects	—	X
AZ979	—	—	—	—
—	—	—	—	—
—	UL/CUR	UL/CUR	UL/CUR	UL/CUR
162/164	166	168	172	174

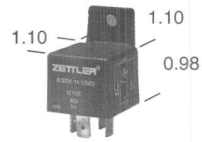
Relay Selection Guide

NEW









SERIES		AZ2280	AZ2300	AZ2800/AZ2850	AZ9721
FEATURES		• Quick connects for coil & contacts • AC and DC coils available • Coils to 277 VAC	• High in-rush capability (55 Amps) • Quick-connects for coil & contacts • Class B (130°C) insulation standard	• 30 Amp switching capability • DPST-N.O. and DPDT configuration • Meets 8 mm creepage, 4000 Vrms dielectric • Class F insulation standard	• 40 A contact rating • High momentary carry current (60 A) • Quick connect terminals • Metal or plastic mounting bracket • Resistor or diode parallel to coil available
EPOXY SEALED		Yes	No	Yes	No
CONTACTS	Form	1 Form A, B, C	1 Form A, C	2 Form A and C	1 Form A or C
CONTACTS	Ratings (Resistive)	1 Form A: 30 A at 240 VAC 1 Form B: 15 A at 240 VAC 1 Form C (NO): 20 A at 240 VAC 1 Form C (NC): 15 A at 240 VAC	1 Form A: 15 A at 220 VAC 1 Form C (NO): 15 A at 220 VAC 1 Form C (NC): 10 A at 220 VAC	30 A at 277 VAC (N.O.) 1 HP at 120 VAC (N.O.) 2.5 HP at 240 VAC (N.O.) TV-10 at 120 VAC (N.O.) 3 A at 277 VAC (N.C.)	40 A at 12 VDC
COIL VOLTAGES		5 thru 48 VDC 12 thru 277 VAC	6 thru 48 VDC	6 thru 110 VDC 24 thru 277 VAC	12 or 24 VDC
COIL POWER AT PICKUP VOLTAGE (typical)		DC: 500 mW AC: 1.4 VA	441 mW	925 mW (DC) 2.6 VA (AC)	760 mW
DIELECTRIC STRENGTH (at sea level for 1 min.)		Contact to coil: 2500 Vrms Between open contacts: 1500 Vrms	Contact to coil: 2000 Vrms Between open contacts: 500 Vrms	Contact to coil: 4000 Vrms Between open contacts: 1500 Vrms Contact set to contact set: 2000 Vrms	Contact to coil: 750 Vrms Between open contacts: 750 Vrms
TYPICAL LIFE	Electrical At rated load unless otherwise specified	1 x 10^5 operations	1 x 10^5 operations	1 x 10^5 operations	1 x 10^5 operations
TYPICAL LIFE	Mechanical	1 x 10^7 operations	1 x 10^7 operations	1 x 10^7 operations	1 x 10^7 operations
APPROXMIATE SIZE IN INCHES L x W x H		1.98 x 1.08 x 1.09	1.89 x 1.22 x 1.15	AZ2800: 2.69 x 1.36 x 1.49 AZ2850: 2.06 x 1.36 x 1.20	1.02 x 1.10 x 0.98
TERMINALS	PC	—	—	THT (AZ2850)	—
TERMINALS	Solder/Plug-in	Quick-Connects	Quick-Connects	—	Quick-Connects
TERMINALS	Bracket Mount	X	X	AZ2800	X
TERMINALS	Socket	—	—	—	—
APPROVAL		UL/CUR	UL/CUR	UL/CUR	—
PAGE NUMBER		176	178	180/182	184

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Suggested Equivalents

American Zettler offers this list of suggested equivalents by its own and other relay manufacturer's part numbers as a guideline for possible interchangeability. Because critical parameters such as coil resistance, must operate voltage, terminal footprint, etc. may differ slightly, a detailed comparison between data sheets should be done before selecting a particular relay as an exact cross reference. Due to rapid addition, deletion, and revision of its own and competitive relays, American Zettler cannot guarantee the total accuracy of this list. Questionable interchangeability of products should be referred to American Zettler, Inc. for clarification.

Aromat	Zettler
CM	AZ977
CB	AZ9721
DS2	AZ830
DS2	AZ830P
DS2	AZ831
DS2Y	AZ830
DS26	AZ831
DS4	AZ830 4 POLE
HD	AZ955
HL	AZ164
HL	AZ165
HL	AZ166
HL	AZ955
K	AZ420
KE	AZ2420
JE-X	AZ991
JJM	AZ947
JM	AZ760
JR	AZ725
JR	AZ755
JS	AZ942
JS	AZ943
JSM	AZ942A
JT	AZ2100
JT	AZ2200
JT-N	AZ2110
JT-N	AZ2210
JW1	AZ692/2692
JW1	AZ697
JW2	AZ732/2732
JW2	AZ733
LK	AZ672
TQ	AZ847
TQ	AZ850
TQ-SMD	AZ848
TQ-SMD	AZ851
TW	AZ846
TW	AZ833
TX	AZ846
TX	AZ833

Cornell-Dublier	Zettler
CDR40	AZ164
CDR40	AZ165
CDR40	AZ166
CDR50	AZ164
CDR50	AZ165
CDR50	AZ166
CDR63	AZ692/2692
CDR63	AZ697
CDR64	AZ732/2732
CDR64	AZ733
CDR66	AZ692/2692
CDR66	AZ697
CDR66	AZ732/2732
CDR66	AZ733
CDR67	AZ725
CDR67	AZ755
CDR70	AZ942
CDR70	AZ943
CDR72	AZ5Y
CDR72	AZ952
CDR72	AZ954Y
CDR74	AZ8
CDR80	AZ2110
CDR80	AZ2150
CDR80	AZ2210
CDR84	AZ2100
CDR84	AZ2200
CDR84	AZ2280
CDR85	AZ8721
CDR88	AZ2210
CDR88	AZ2150
CDR88	AZ2210

Fujitsu Takamisawa	Zettler
SY	AZ955
FBR210	AZ5X
FBR210	AZ5Y
FBR210	AZ951
FBR210	AZ952
FBR210	AZ954X
FBR210	AZ954Y
MZ	AZ951
A	AZ847
A	AZ850
AS	AZ848
AS	AZ850
FBR10	AZ833
FBR10	AZ846
FBR12	AZ833
FBR12	AZ846
NA	AZ846
NAS	AZ849
BA	AZ833
BA	AZ846
RA	AZ822
RA4	AZ830 4 POLE
RY	AZ822
FBR240	AZ820
FBR240	AZ821
JS	AZ696
LZ	AZ8
FBR160	AZ942
FBR160	AZ943
FTR-H1	AZ692/2692
FTR-H1	AZ697
FTR-H1	AZ763
VS	AZ692/2692
VS	AZ697
VSB	AZ725
VSB	AZ755
FBR600	AZ692/2692
FBR600	AZ697
FBR600	AZ732/2732
FBR600	AZ733
FBR600	AZ725
FBR600	AZ755
FTR-F1	AZ742
VB	AZ732/2732
VB	AZ733
VH	AZ760
FBR51	AZ947
FRL270	AZ971

C P Clare (General Inst.)	Zettler
LM	AZ820
LM	AZ821
LM	AZ830
LM	AZ831
LX	AZ830P
LQ	AZ847
LQ	AZ850

Guardian	Zettler
1390 AC/DC	AZ165
1390P AC/DC	AZ164
1390F AC/DC	AZ166
1495	AZ820
1495	AZ821
1505	AZ5Y
1505	AZ952
1505	AZ952
1555	AZ420
1575	AZ942
1575	AZ943
1540 AC	AZ165
1545 DC	AZ164
1655/1655S	AZ692/2692
1655/1655S	AZ697
1655/1655S	AZ732/2732
1655/1655S	AZ733
167	AZ8
1690 AC/DC	AZ165
1690F AC/DC	AZ166

Hasco	Zettler
BAS-111	AZ5Y
BAS-111	AZ952
BAS-511	AZ5Y
BAS-511	AZ952
BS-211	AZ5Y
BS-211	AZ952
HS-211	AZ5Y
HS211	AZ952
HAS-111	AZ5Y
HAS-111	AZ952
HAS-112	AZ820
HS-212	AZ822
HAS-114	AZ820
HS-115	AZ822
T	AZ850
SSD	AZ8
KLT	AZ942
KLT	AZ943
KDS	AZ946
CARB	AZ970
HAT-901	AZ2150
HAT-901	AZ2110
HAT-902	AZ2100
HAT-903	AZ2280
PR	AZ697
PR	AZ692
PR	AZ733
PR	AZ732

Suggested Equivalents

Hasco (cont.)	Zettler
PR	AZ755
PR	AZ725
UJ	AZ164
UJ	AZ165
UJ	AZ166
UJ	AZ167

Idec	Zettler
RD	AZ831
RW	AZ830
RW	AZ831
RG	AZ692/2692
RG	AZ697
RCN	AZ942
RCN	AZ943
RT	AZ420

Magnecraft	Zettler
Class 67	AZ420
Class 76	AZ692/2692
Class 76	AZ697
Class 76	AZ732/2732
Class 76	AZ733
Class 76	AZ725
Class 76	AZ755
Class 78	AZ164
Class 78	AZ165
Class 90	AZ2110
Class 90	AZ2210
Class 90	AZ2150
Class 90	AZ2251
Class 91	AZ2100
Class 91	AZ2280
Class 178	AZ942
Class 178	AZ943
Class 272	AZ820
Class 272	AZ822
Class 272	AZ831
Class 232	AZ5Y
Class 232	AZ951
Class 232	AZ952
Class 232	AZ954X
Class 232	AZ954Y
Class 270	AZ942
Class 270	AZ943
Class 277	AZ692/2692
Class 277	AZ697
Class 277	AZ72/2732
Class 277	AZ733
Class 277	AZ725
Class 277	AZ755
Class 281	AZ164
Class 281	AZ165

CII/Midtex	Zettler
MQS	AZ851
MQP	AZ850
MN	AZ846
MN	AZ833
MD	AZ820
MD	AZ821
MD	AZ822
190	AZ820
190	AZ822
327	AZ830
327	AZ830P
191	AZ955
MS	AZ5Y
MS	AZ952
MS	AZ5Y
MS	AZ952
MS	AZ954Y
410	AZ420
500	AZ766
501	AZ765
496	AZ942
496	AZ943
596	AZ943
597	AZ932
498	AZ755
491	AZ2100
491	AZ2120
491	AZ2280
590	AZ2110
590	AZ2150
V4	AZ9721
V59	AZ2150
V59	AZ942A
VM	AZ975
VM	AZ976
VP	AZ970
VP	AZ971
156	AZ164
156	AZ165
156	AZ166
158	AZ164
158	AZ165
158	AZ166
258	AZ164
258	AZ165
258	AZ166

NEC	Zettler
EA2	AZ847
EA2	AZ850
EB2	AZ848
EB2	AZ851
EC2	AZ846
EC2	AZ833
EE2	AZ849
EE2	AZ833

NEC (cont.)	Zettler
MR301	AZ942
MR301	AZ943
MR31	AZ942
MR31	AZ943
MR602	AZ820
MR602	AZ830
MR602	AZ830P
MR604	AZ830 4 POLE
MR612	AZ830
MR612	AZ830P
MR612	AZ831
MR614	AZ830 4 POLE
MR62	AZ820
MR62	AZ831
MR622	AZ830
MR622	AZ831
MR71	AZ692/2692
MR71	AZ697
MR72	AZ732/2732
MR72	AZ733

Omron	Zettler
G2E	AZ5Y
G2E	AZ952
G2E	AZ954Y
G2L	AZ693/2693
G2R	AZ692/2692
G2R	AZ697
G2R	AZ732/2732
G2R	AZ733
G2V	AZ820
G2V	AZ821
G4A	AZ760
G4K	AZ8
G4S	AZ942
G4S	AZ943
G5C	AZ944
G5L	AZ942
G5L	AZ943
G5V-1	AZ955
G5V-2	AZ820
G5V-2	AZ821
G6A	AZ830
G6A	AZ830P
G6A	AZ830 4 POLE
G6A	AZ831
G6D	AZ695
G6R	AZ696
G7G	AZ2100
G7G	AZ2200
G8P	AZ2111
G8P	AZ2151
LC	AZ942
LC	AZ943

Omron (cont.)	Zettler
LY	AZ164
LY	AZ165
LY	AZ166
MHS	AZ420
MHQ	AZ2420

OEG	Zettler
OUA/OUAT	AZ951
OUA/OUAT	AZ954X
OUAZ	AZ951
OUAZ	AZ954X
ORZ	AZ820
ORZ	AZ820
ORZ	AZ830
OUDT/OUDTM	AZ8
OUDE	AZ8
SRU/SRUT	AZ942
SRU/SRUT	AZ943
ORW	AZ942
ORW	AZ943
ORA	AZ991
OMI/OMIH	AZ692/2692
OMI/OMIH	AZ697
OMI/OMIH	AZ732/2732
OMI/OMIH	AZ733
OSA/OMIH	AZ732/2732
OSA/OMIH	AZ733
OSZ/OMIH	AZ725
OSZ/OMIH	AZ755
SRET	AZ164
SRET	AZ165
SRET	AZ166
SRW	AZ942
SRW	AZ943
OZ	AZ725
OZ	AZ755
OMIT	AZ692/2692
OMIT	AZ697
OJ	AZ767
OJE	AZ767

P&B	Zettler
K10	AZ164
K10	AZ165
K10	AZ166
RKA	AZ692/2692
RKA	AZ697
RKA	AZ732/2732
RKA	AZ733
RKS	AZ692/2692
RKS	AZ697
RKS	AZ732/2732
RKS	AZ733
RKS	AZ725
RKS	AZ755

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Suggested Equivalents

P&B (cont.)	Zettler
R10	AZ420
R10R	AZ2420
RT	AZ742
RT	AZ763
RT	AZ764
T70	AZ942
T70	AZ943
T7C	AZ942
T7C	AZ943
T7N	AZ942
T7N	AZ943
T72	AZ942
T72	AZ943
T73	AZ8
T75	AZ696
T77	AZ765
T77	AZ767
T81	AZ5X
T81	AZ951
T81	AZ954X
T82	AZ820
T82	AZ821
T82	AZ824
T83	AZ830
T83	AZ831
T83	AZ832
T84	AZ830 4-Pole
T85	AZ822
T90	AZ2110/2111
T90	AZ2150/2151
T91	AZ2100/2101
T91	AZ2200
T9A	AZ2100
T9A	AZ2150
T9A	AZ2200
T92	AZ2800
T92	AZ2850
V23042	AZ830
V23042	AZ831
V23042	AZ832
V23079	AZ846
V23079	AZ849
V23079	AZ833
V23105	AZ822
V23106	AZ847/850
V23106	AZ848/851
VKM	AZ975/976
T72J	AZ942A
T72K	AZ942A
T72M	AZ942A
VKP	AZ970/971
VFM	AZ977/978
VF4	AZ9721
VF7	AZ979/980

Schrack	Zettler
RP	AZ692/2692
RP	AZ697
RP	AZ732/2732
RP	AZ733
RP	AZ725
RP	AZ755
RS	AZ820
RS	AZ822
RS	AZ830P
RS	AZ832P
RT	AZ742
RT	AZ763
RT	AZ764
RY	AZ696
TD	AZ2110/2111
TD	AZ2150/2151
TE	AZ2100
TE	AZ2280
TF	AZ942
TF	AZ943
TN	AZ942
TN	AZ943
TP	AZ8
ZD	AZ2110/2111
ZD	AZ2150/2151
ZF	AZ942
ZF	AZ943
ZK	AZ420
ZL	AZ420

Siemens	Zettler
V23042	AZ830
V23042	AZ831
V23042	AZ832
V23127	AZ692/2692
V23127	AZ697
V23057	AZ692/2692
V23057	AZ697
V23056	AZ692/2692
V23056	AZ697
V23056	AZ732/2732
V23056	AZ733
V23056	AZ725
V23056	AZ755
V23054	AZ420
V23154	AZ420
W11	AZ5X
W11	AZ5Y
W11	AZ951
W11	AZ952
W11	AZ954X
W11	AZ954Y

Song Chuan	Zettler
842	AZ5Y
842	AZ952

Song Chuan (cont.)	Zettler
842A	AZ951
834	AZ766
835	AZ765
835	AZ767
812H	AZ942
812H	AZ943
812HM	AZ942A
833H	AZ943
801H	AZ942
801H	AZ943
845	AZ692
845	AZ697
845	AZ732
845	AZ733
845	AZ742
845	AZ763
793	AZ725
793	AZ755
793	AZ764
832	AZ2110
832	AZ2150
SCLB	AZ164
SCLB	AZ165
SCLB	AZ166
SCLD	AZ164
SCLD	AZ165
SCLD	AZ166
SCLA	AZ164
SCLA	AZ165
SCLA	AZ166
SCL/SCL-1	AZ164
SCL/SCL-1	AZ165
SCL/SCL-1	AZ166
822E	AZ970
822E	AZ970E
822E	AZ971
822E	AZ971E
792	AZ9721
804	AZ9722

Takamisawa	Zettler
A	AZ847/850
AS	AZ848/851
JS	AZ696
LZ	AZ8
MZ	AZ951
MZ	AZ954X
NA	AZ846/AZ833
AS	AZ849
RA	AZ830/830P
RA	AZ831
RA	AZAZ832
A4	AZ830 4-Pole
RY	AZ820

Takamisawa (cont.)	Zettler
RY	AZ821
RY	AZ822
RY	AZ824
VB	AZ692/2692
VB	AZ697
VS	AZ732/2732
VS	AZ733
VSB	AZ725
VSB	AZ755

Telemecanique	Zettler
DR	AZ820
DR	AZ821
DRS	AZ830
DRS	AZ831
T154	AZ420
T163	AZ420

Contact Selector Chart

RELAY MODEL (Series)	CONTACT ARRANGEMENT	CONTACT STYLE		SWITCHING LOAD (Noninductive Load)
		Single	Bifurcated	10µA 100µA 1mA 10mA 100mA 1A 2A 5A 10A 20A 30A 40A
AZ5	1 Form C	X		
AZ8	1 Form A or C	X		
AZ420/2420	1 Form A thru 6 Form C	X	X	
AZ672	1 Form A	X		
AZ683	1 Form A or C	X		
AZ692/693	1 Form A, B or C	X		
AZ695	1 Form A	X		
AZ696	1 Form A or C	X		
AZ697	1 Form A or C	X		
AZ723	2 Form A or C	X		
AZ725	1 Form A or C	X		
AZ726	1 Form A or C	X		
AZ732	2 Form A or C	X		
AZ733	2 Form A or C	X		
AZ733W	2 Form A	X		
AZ742	2 Form C	X		
AZ755	1 Form A, B or C	X		

All values when switching load under normal environmental conditions (i.e., room temperature and humidity) and at nominal coil voltage.

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Contact Selector Chart

MAX. SWITCHED POWER	MAX. SWITCHED VOLTAGE	TYPICAL APPLICATIONS	RELAY MODEL (Series)	PAGE NO.
Lt: 30 W or 60 VA Hvy: 60 W or 120 VA	150 VDC or 300 VAC	Telecommunications, alarm systems, copiers and control equipment	AZ5	36
Lt: 100 W or 600 VA Med: 180 W or 1800 VA Hvy: 300 W or 2400 VA	150 VDC or 300 VAC	Copiers, alarm systems, coin operated machines, control equipment, home appliances, automotive	AZ8	38
Lt: 56 W or 230 VA Hvy: 210 W or 860 VA	150 VDC or 300 VAC	Computers, instruments, telecommunications, alarm systems	AZ420/ 2420	40
240 W or 2000 VA	100 VDC or 250 VAC	Consumer appliances, HVAC, TV	AZ672	48
SPST: 300 W or 2500 VA SPDT: 150 W or 1875 VA	150 VDC or 400 VAC 125 VDC or 400 VAC	Incandescent lamp controls, computers, consumer electronics, process controls, alarm systems, copiers, HVAC	AZ683	50
300 W or 2500 VA	150 VDC or 380 VAC	Computers, consumer electronics, process controls, alarm systems, copiers, automotive, industrial equipment, air conditioners	AZ692/ 693	52
150 W or 1250 VA	150 VDC or 250 VAC	Terminal devices for information processing and office equip., measuring instruments, NC machines, controllers, printers, temp. and programmable logic controllers	AZ695	56
300 W or 2500 VA	150 VDC or 380 VAC	Computers, consumer electronics, process controls, alarm systems, copiers, automotive, industrial equipment, air conditioners, home appliances	AZ696	58
300 W or 2500 VA	150 VDC or 380 VAC	Incandescent lamp controls, computers, consumer electronics, process controls, alarm systems, copiers, HVAC	AZ697	60
DPST: 150 W or 1250 VA DPDT: 90 W or 500 VA	150 VDC or 400 VAC 125 VDC or 400 VAC	Process controls, alarm systems, computers, copiers, industrial equipment, air conditioners, consumer electronics, automotive	AZ723	62
384 W or 4000 VA	150 VDC or 400 VAC	Automotive, industrial equipment, process controls, consumer electronics, computers, alarm systems, copiers, air conditioners	AZ725	64
SPST: 480 W or 4000 VA SPDT: 240 W or 2000 VA	150 VDC or 400 VAC 125 VDC or 400 VAC	Incandescent lamp controls, computers, consumer electronics, process controls, alarm systems, copiers, HVAC	AZ726	66
300 W or 2770 VA	150 VDC or 400 VAC	Process controls, alarm systems, computers, copiers, industrial equipment, air conditioners, consumer electronics, automotive	AZ732	68
300 W or 2500 VA	150 VDC or 380 VAC	Computers, consumer electronics, process controls, alarm systems, copiers, HVAC	AZ733	70
240 W or 2500 VA	150 VDC or 400 VAC	Process controls, alarm systems, computers, copiers, industrial equipment, air conditioners, consumer electronics, automotive, and "UPS" systems"	AZ733W	72
240 W or 2 X 2000 VA	150 VDC or 400 VAC	Incandescent lamp controls, computers, consumer electronics, process controls, alarm systems, copiers, HVAC	AZ742	74
480 W or 5540 VA	150 VDC or 380 VAC	Incandescent lamp controls, computers, consumer electronics, process controls, alarm systems, copiers, HVAC	AZ755	76

Contact Selector Chart

RELAY MODEL (Series)	CONTACT ARRANGEMENT	CONTACT STYLE		SWITCHING LOAD (Noninductive Load)
		Single	Bifurcated	10μA 100μA 1mA 10mA 100mA 1A 2A 5A 10A 20A 30A 40A
AZ760	1 Form A	X		
AZ763	1 Form C	X		
AZ764	1 Form A or C	X		
AZ765	1 Form A or C	X		
AZ766	1 Form A	X		
AZ767	1 Form A or C	X		
AZ820	2 Form C		X	
AZ821/831	2 Form C	X		
AZ822	2 Form C		X	
AZ826	2 Form C		X	
AZ830	2 Form C		X	
AZ830P	2 Form C		X	
AZ830 4-pole	4 Form C		X	
AZ832	2 Form C		X	
AZ832P	2 Form C		X	
AZ833	2 Form C		X	
AZ833P	2 Form C		X	

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Contact Selector Chart

MAX. SWITCHED POWER	MAX. SWITCHED VOLTAGE	TYPICAL APPLICATIONS	RELAY MODEL (Series)	PAGE NO.
Lt: 30 W or 60 VA Hvy: 60 W or 120 VA	150 VDC or 300 VAC	Telecommunications, alarm systems, copiers and control equipment	AZ5	36
Lt: 100 W or 600 VA Med: 180 W or 1800 VA Hvy: 300 W or 2400 VA	150 VDC or 300 VAC	Copiers, alarm systems, coin operated machines, control equipment, home appliances, automotive	AZ8	38
Lt: 56 W or 230 VA Hvy: 210 W or 860 VA	150 VDC or 300 VAC	Computers, instruments, telecommunications, alarm systems	AZ420/ 2420	40
240 W or 2000 VA	100 VDC or 250 VAC	Consumer appliances, HVAC, TV	AZ672	48
SPST: 300 W or 2500 VA SPDT: 150 W or 1875 VA	150 VDC or 400 VAC 125 VDC or 400 VAC	Incandescent lamp controls, computers, consumer electronics, process controls, alarm systems, copiers, HVAC	AZ683	50
300 W or 2500 VA	150 VDC or 380 VAC	Computers, consumer electronics, process controls, alarm systems, copiers, automotive, industrial equipment, air conditioners	AZ692/ 693	52
150 W or 1250 VA	150 VDC or 250 VAC	Terminal devices for information processing and office equip., measuring instruments, NC machines, controllers, printers, temp. and programmable logic controllers	AZ695	56
300 W or 2500 VA	150 VDC or 380 VAC	Computers, consumer electronics, process controls, alarm systems, copiers, automotive, industrial equipment, air conditioners, home appliances	AZ696	58
300 W or 2500 VA	150 VDC or 380 VAC	Incandescent lamp controls, computers, consumer electronics, process controls, alarm systems, copiers, HVAC	AZ697	60
DPST: 150 W or 1250 VA DPDT: 90 W or 500 VA	150 VDC or 400 VAC 125 VDC or 400 VAC	Process controls, alarm systems, computers, copiers, industrial equipment, air conditioners, consumer electronics, automotive	AZ723	62
384 W or 4000 VA	150 VDC or 400 VAC	Automotive, industrial equipment, process controls, consumer electronics, computers, alarm systems, copiers, air conditioners	AZ725	64
SPST: 480 W or 4000 VA SPDT: 240 W or 2000 VA	150 VDC or 400 VAC 125 VDC or 400 VAC	Incandescent lamp controls, computers, consumer electronics, process controls, alarm systems, copiers, HVAC	AZ726	66
300 W or 2770 VA	150 VDC or 400 VAC	Process controls, alarm systems, computers, copiers, industrial equipment, air conditioners, consumer electronics, automotive	AZ732	68
300 W or 2500 VA	150 VDC or 380 VAC	Computers, consumer electronics, process controls, alarm systems, copiers, HVAC	AZ733	70
240 W or 2500 VA	150 VDC or 400 VAC	Process controls, alarm systems, computers, copiers, industrial equipment, air conditioners, consumer electronics, automotive, and "UPS" systems"	AZ733W	72
240 W or 2 X 2000 VA	150 VDC or 400 VAC	Incandescent lamp controls, computers, consumer electronics, process controls, alarm systems, copiers, HVAC	AZ742	74
480 W or 5540 VA	150 VDC or 380 VAC	Incandescent lamp controls, computers, consumer electronics, process controls, alarm systems, copiers, HVAC	AZ755	76

Contact Selector Chart

RELAY MODEL (Series)	CONTACT ARRANGEMENT	CONTACT STYLE		SWITCHING LOAD (Noninductive Load)
		Single	Bifurcated	10μA 100μA 1mA 10mA 100mA 1A 2A 5A 10A 20A 30A 40A
AZ846	2 Form C		X	
AZ846P	Form C		X	
AZ847	2 Form C		X	
AZ848	2 Form C		X	
AZ849	2 Form C		X	
AZ850	2 Form C		X	
AZ851	2 Form C		X	
AZ932	1 Form A or C	X		
AZ942	1 Form A or C	X		
AZ942A	1 Form A or C	X		
AZ943	1 Form A or C	X		
AZ944	1 Form A or C	X		
AZ946	2 Form C	X		
AZ947/947W	1 Form A or C	X		
AZ951/952	1 Form C	X		
AZ954	1 Form C	X		
AZ955	1 Form C		X	

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Contact Selector Chart

MAX. SWITCHED POWER	MAX. SWITCHED VOLTAGE	TYPICAL APPLICATIONS	RELAY MODEL (Series)	PAGE NO.
60 W or 62.5 VA	220 VDC or 250 VAC	Computers, communications, data processing equip., security, games, home and commercial appliances, process control and automation equip.	AZ846	116
60 W or 62.5 VA	220 VDC or 250 VAC	Computers, communications, data processing equip., security, games, home and commercial appliances, process control and automation equip.	AZ846P	118
60 W or 62.5 VA	220 VDC or 250 VAC	Computers, communications, data processing equip., security, games, home and commercial appliances, process control and automation equip.	AZ847	121
60 W or 62.5 VA	220 VDC or 250 VAC	Computers, communications, data processing equip., security, games, home and commercial appliances process control and automation equip.	AZ848	123
60 W or 62.5 VA	220 VDC or 250 VAC	Computers, communications, data processing equip., security, games, home and commercial appliances process control and automation equip.	AZ849	127
30 W or 62.5 VA	220 VDC or 250 VAC	Computers, communications, data processing equip., security, games, home and commercial appliances process control and automation equip.	AZ850	130
30 W or 62.5 VA	220 VAC or 250 VAC	Computers, communications, data processing equip., security, games, home and commercial appliances process control and automation equip.	AZ851	132
210 W or 2400 VA	30 VDC or 300 VAC	Control equipment, appliances, alarm systems, copiers	AZ932	135
MD: 150 W or 2770 VA HD: 480 W or 4000 VA	30 VDC or 300 VAC	Control equipment, appliances, alarm systems, copiers	AZ942	137
280 W or 5000 VA	30 VDC or 250 VAC	Power windows, power door locks, intermittent wipers, tilt-lock wheel, sunroof, auto alarm systems, emergency vehicle lighting	AZ942A	139
210 W or 2770 VA	30 VDC or 300 VAC	Control equipment, appliances, alarm systems, copiers	AZ943	141
SPST: 300 W or 2000 VA SPDT: 150 W or 1250 VA	250 VDC or 125 VAC	Home appliances, HVAC, car audio, car air conditioning	AZ944	143
LD: 30 W or 277 VA MD: 150 W or 1385 VA	150 VDC or 300 VAC	Control equipment, appliances, alarm systems, copiers	AZ946	145
280 W	50 VDC	Power windows, power door locks, intermittent wipers, tilt-lock wheel, sunroof, auto alarm systems, emergency vehicle lighting	AZ947/ 947W	147
LD: 30 W or 125 VA HD: 150 W or 625 VA	150 VDC or 300 VAC	Alarm systems, copiers, control equipment	AZ951/ 952	149
LD: 30 W or 125 VA HD: 30 W or 250 VA	150 VDC or 300 VAC	Telecommunications, alarm systems, copiers and control equipment	AZ954	151
30 W or 60 VA	60 VDC or 125 VAC	Telecommunications, alarm systems, copiers and control equipment	AZ955	153

Contact Selector Chart

RELAY MODEL (Series)	CONTACT ARRANGEMENT	CONTACT STYLE		SWITCHING LOAD (Noninductive Load)
		Single	Bifurcated	10μA 100μA 1mA 10mA 100mA 1A 2A 5A 10A 20A 30A 40A 80
AZ970/971	1 Form A, B or C	X		
AZ975/976	1 Form A, B, C, U, V, or W	X		
AZ977	1 Form A or C	X		
AZ979	1 Form A or C	X		
AZ980	1 Form A or C	X		
AZ991	1 Form A or C	X		
AZ2100	1 Form A, B or C	X		
AZ2110/2120	1 Form A, B or C	X		
AZ2150	1 Form A, B or C	X		
AZ2280	1 Form A, B or C	X		
AZ2300	1 Form A, B or C	X		
AZ2800	2 Form A and C	X		
AZ2850	2 Form A and C	X		
AZ9721	1 Form A or C	X		

All values when switching load under normal environmental conditions (i.e., room temperature and humidity) and at nominal coil voltage.

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Contact Selector Chart

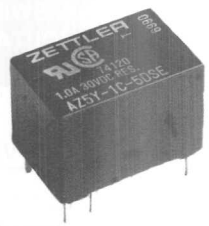
MAX. SWITCHED POWER	MAX. SWITCHED VOLTAGE	TYPICAL APPLICATIONS	RELAY MODEL (Series)	PAGE NO.
560 W	150 VDC	Power windows, power door locks, intermittent wipers, tilt-lock wheel, sunroof, auto alarm systems, emergency vehicle lighting	AZ970/ 971	155
200 W or 500 VA	100 VDC	Power windows, power door locks, intermittent wipers, tilt-lock wheel, sunroof, auto alarm systems, emergency vehicle lighting	AZ975/ 976	157
280 W	150 VDC	Power windows, power door locks, intermittent wipers, tilt-lock wheel, sunroof, auto alarm systems, emergency vehicle lighting	AZ977	160
1120 W	30 VDC	Power windows, power door locks, intermittent wipers, tilt-lock wheel, sunroof, auto alarm systems, emergency vehicle lighting	AZ979	162
1120 W	30 VDC	Power windows, power door locks, intermittent wipers, tilt-lock wheel, sunroof, auto alarm systems, emergency vehicle lighting	AZ980	164
LD: 90 W or 831 VA MD: 150 W or 1250 VA HD: 300 W or 1250 VA	30 VDC or 277 VAC	Home appliances, programmable controllers, garage door openers, emergency lighting equipment, air conditioners	AZ991	166
900 W or 7200 VA	30 VDC or 300 VAC	Home appliances, automotive, air conditioners, control and heating equipment	AZ2100	168
900 W or 7200 VA	30 VDC or 300 VAC	Home appliances, automotive, air conditioners, control and heating equipment	AZ2110/ 2120	172
900 W or 7200 VA	30 VDC or 300 VAC	Home appliances, automotive, air conditioners, control and heating equipment	AZ2150	174
900 W or 7200 VA	30 VDC or 277 VAC	HVAC, home appliances, office lighting equipment	AZ2280	176
450 W or 3300 VA	150 VDC or 400 VAC	HVAC, lamp and motor controls for office equipment, power control for space heaters, microwave oven (magnetron) controls	AZ2300	178
560 W or 8310 VA	30 VDC or 400 VAC	Home appliances, automotive, air conditioners, control and heating equipment	AZ2800	180
560 W or 8310 VA	30 VDC or 400 VAC	Home appliances, automotive, air conditioners, control and heating equipment	AZ2850	182
480 W (SPST and NO) 360 W (NC)	75 VDC	Power windows, power door locks, intermittent wipers, tilt-lock wheel, sunroof, auto alarm systems, emergency vehicle lighting	AZ9721	184

AZ5

SUBMINIATURE PC BOARD RELAY

FEATURES

- Subminiature size for high density packaging
- Coil sensitivity to 100 mW
- Extremely low cost
- Coils to 24 VDC
- Epoxy sealed for automatic wave soldering
- 1 Amp and 2 Amp contacts
- Life expectancy to 10 million operations
- Meets FCC Part 68.302 1500 V lightning surge
- Meets FCC Part 68.304 1000 V dielectric
- UL file E43203; CSA file 74120



CONTACTS

Arrangement	SPDT (1 Form C) Welded crossbar construction
Ratings **Light Duty**	Resistive load: Max. switched power: 30 W or 60 VA Max. switched current: 1 A Max. switched voltage: 150 VDC or 300 VAC **UL Rating:** 1 A at 30 VDC 0.5 A at 120 VAC
Heavy Duty	Max. switched power: 60 W or 120 VA Max. switched current: 2 A Max. switched voltage: 150 VDC or 300 VAC **UL Rating:** 2 A at 30 VDC 1 A at 120 VAC
Material **Light Duty** **Heavy Duty**	 Silver alloy, gold clad Silver alloy
Resistance	< 50 milliohms initially

COIL

Power **At Pickup Voltage (typical)**	 Standard coil: 220 mW Sensitive coil: 100 mW
Max. Continuous Dissipation	1.1 W at 20°C (68°F) ambient .8 W at 40°C (104°F) ambient
Temperature Rise	Standard: 40°C (72°F) at nominal coil voltage Sensitive: 22°C (40°F) at nominal voltage
Temperature	Max. 105°C (221°F)

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Other coil resistances and sensitivities available upon request.
4. Specifications subject to change without notice.

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 10 million operations Standard Duty: 5 x 10^5 at 1 A, 30 VDC 4 x 10^5 at 0.5 A, 120 VAC Heavy Duty: 2 x 10^5 at 2 A, 30 VDC 2 x 10^5 at 1 A, 120 VAC
Operate Time (typical)	Standard: 3 ms at nominal coil voltage Sensitive: 5 ms at nominal coil voltage
Release Time (typical)	1 ms at nominal coil voltage (with no coil suppression)
Capacitance	Coil to contact: 3.0 pF Contact to contact: 3.0 pF
Bounce (typical)	At 10 mA contact current 2 ms at operate 8 ms at release
Dielectric Strength (at sea level for 1 min.)	1250 Vrms coil to contact 500 Vrms between open contacts Meets FCC Part 68.302 1500 V lightning surge Meets FCC Part 68.304 1000 V dielectric
Insulation Resistance	100 megohms min. at 20°C, 500 VDC, 50% RH
Dropout	Greater than 10% of nominal coil voltage
Ambient Temperature **Operating** **Storage**	At nominal coil voltage Standard: -25°C (-13°F) to 60°C (140°F) Sensitive: -25°C (-13°F) to 75°C (167°F) Both: -25°C (-13°F) to 105°C (221°F)
Vibration	0.062" DA at 10–55 Hz
Shock	Standard: 10 g Sensitive: 6 g
Enclosure	P.B.T. polyester
Terminals	Tinned copper alloy
Max. Solder Temp.	270°C (518°F)
Max. Solder Time	5 seconds
Max. Immersion Time	30 seconds
Weight	3.5 grams

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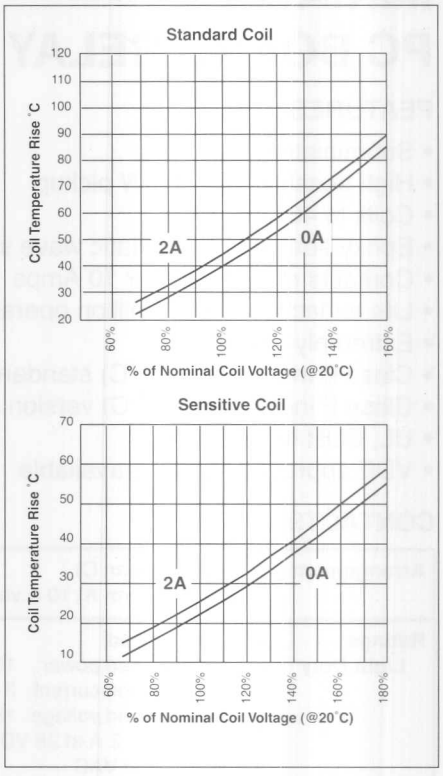
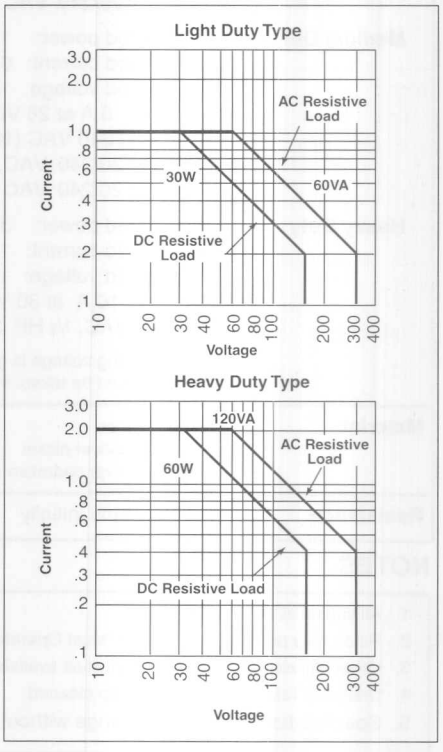
RELAY ORDERING DATA

STANDARD RELAYS: Light Duty Type					
COIL SPECIFICATIONS				ORDER NUMBER	
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ±10%	Must Operate VDC	AZ5X Footprint	AZ5Y Footprint
5	6.8	56	3.5	AZ5X–1C–5DE	AZ5Y–1C–5DE
6	8.1	80	4.2	AZ5X–1C–6DE	AZ5Y–1C–6DE
12	16.2	320	8.4	AZ5X–1C–12DE	AZ5Y–1C–12DE
24	32.4	1,280	16.8	AZ5X–1C–24DE	AZ5Y–1C–24DE
SENSITIVE RELAYS: Light Duty Type					
COIL SPECIFICATIONS				ORDER NUMBER	
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ±10%	Must Operate VDC	AZ5X Footprint	AZ5Y Footprint
5	10.0	120	3.5	AZ5X–1C–5DSE	AZ5Y–1C–5DSE
6	12.0	180	4.2	AZ5X–1C–6DSE	AZ5Y–1C–6DSE
12	24.0	700	8.4	AZ5X–1C–12DSE	AZ5Y–1C–12DSE
24	48.0	2,800	16.8	AZ5X–1C–24DSE	AZ5Y–1C–24DSE
STANDARD RELAYS: Heavy Duty Type					
COIL SPECIFICATIONS				ORDER NUMBER	
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ±10%	Must Operate VDC	AZ5X Footprint	AZ5Y Footprint
5	6.8	56	3.5	AZ5X–1CH–5DE	AZ5Y–1CH–5DE
6	8.1	80	4.2	AZ5X–1CH–6DE	AZ5Y–1CH–6DE
12	16.2	320	8.4	AZ5X–1CH–12DE	AZ5Y–1CH–12DE
24	32.4	1,280	16.8	AZ5X–1CH–24DE	AZ5Y–1CH–24DE

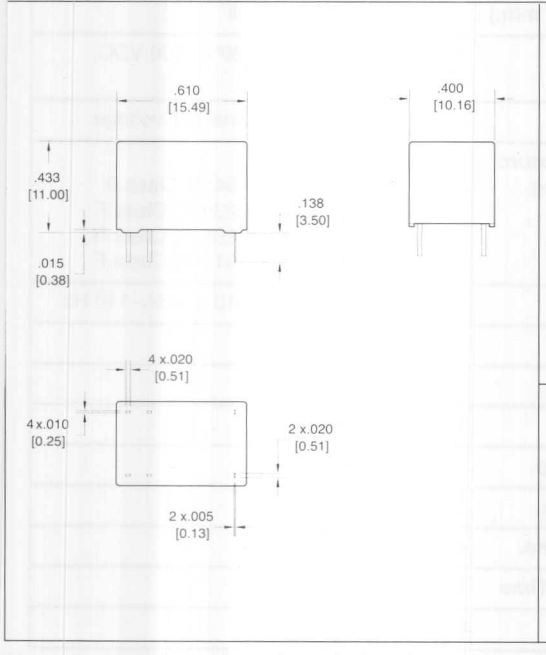
Coil Temperature Rise



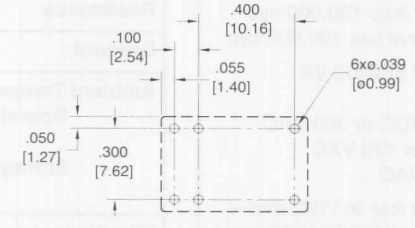
Maximum Switching Capacity



MECHANICAL DATA



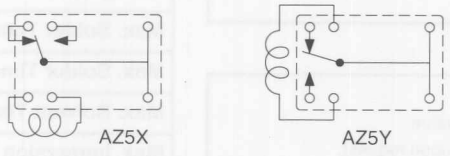
PC BOARD LAYOUT



AZ 5X & 5Y

Viewed toward terminals

WIRING DIAGRAM



Viewed toward terminals

Dimensions in inches with metric equivalents in parentheses. Tolerance: ± .010"

AZ8

MINIATURE PC BOARD RELAY

FEATURES

- Subminiature size
- High sensitivity, 110 mW pickup
- Coils to 48 VDC
- Epoxy sealed for automatic wave soldering
- Contacts rated at 3, 6 or 10 Amps
- Life expectancy to 20 million operations
- Extremely low cost
- Class B insulation (130°C) standard
- Class F insulation (155°C) version available
- UL, CUR file E44211
- VDE approved versions available

CONTACTS

Arrangement	SPDT (1 Form C) SPST (1 Form A) 10 A version only
Ratings **Light Duty**	Resistive load: Max. switched power: 100 W or 600 VA Max. switched current: 3 A Max. switched voltage: 150* VDC or 300 VAC **UL Rating:** 2 A at 28 VDC or 300 VAC 1/8 HP 120 VAC 1/10 HP 120/240 VAC (100,000 cyc) 1.2/0.6 A at 120/240 VAC, pilot duty 100,000 cyc 3.0/1.5 A at 120/240 VAC general use 100,000 cyc
Medium Duty	Max. switched power: 180 W or 1800 VA Max. switched current: 6 A Max. switched voltage: 150* VDC or 300 VAC **UL Rating:** 6 A at 28 VDC or 300 VAC 1/8 HP 120/240 VAC (100,000 cyc) 1.5/0.8 A at 120/240 VAC, pilot duty 100,000 cyc 3.8/1.9 A at 120/240 VAC general use 100,000 cyc
Heavy Duty	Max. switched power: 300 W or 2400 VA Max. switched current: 10 A Max. switched voltage: 150* VDC or 300 VAC **UL Rating:** 10 A at 30 VDC or 120 VAC 1/4 HP 120 VAC, 1/2 HP 250 VAC Note: If switching voltage is greater than 30 VDC, special precautions must be taken. Please contact the factory.
Material	Light duty: Silver Medium duty: Silver nickel Heavy duty: Silver cadmium oxide
Resistance	< 100 milliohms initially

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Other coil resistances and sensitivities available upon request.
4. Unsealed relays should not be dip cleaned.
5. Specifications subject to change without notice.

COIL

Power **At Pickup Voltage (typical)**	Standard coil: 210 mW Sensitive coil: 140 mW Heavy duty: 228 mW (110 mW available)
Max. Continuous Dissipation	Class B: 2.0 W 20°C (68°F) ambient 1.6 W 40°C (104°F) ambient Class F: 2.5 W 20°C (68°F) ambient 2.1 W 40°C (104°F) ambient
Temperature Rise	At nominal coil voltage Standard coil: 38°C (68°F) Sensitive coil: 28°C (50°F)
Temperature	Max. 130°C (266°F) Class B Max. 155°C (311°F) Class F

GENERAL DATA

Life Expectancy **Mechanical** **Electrical Light Duty** **Medium Duty** **Heavy Duty**	Minimum operations 100 million operations 3 x 10^5 at 3 A, 120 VAC 1.8 x 10^5 at 6 A, 120 VAC 1 x 10^5 at 10 A, 120 VAC
Operate Time (typical)	5 ms at nominal coil voltage
Release Time (typical)	2 ms at nominal coil voltage (with no coil suppression)
Dielectric Strength (at sea level for 1 min.)	750 Vrms contact to contact 3000 Vrms contact to coil
Insulation Resistance	1000 megohms min. at 20°C, 500 VDC, 50% RH
Dropout	Greater than 5% of nominal coil voltage
Ambient Temperature **Operating** **Storage**	At nominal coil voltage -55°C (-67°F) to 90°C (194°F) Class B -55°C (-67°F) to 115°C (239°F) Class F -55°C (-67°F) to 130°C (266°F) Class B -55°C (-67°F) to 155°C (311°F) Class F
Vibration	0.062" DA at 10–55 Hz, 10 g at 55–110 Hz
Shock	10 g
Enclosure	P.E.T. polyester
Terminals	Tinned copper alloy, P.C.
Max. Solder Temp.	270°C (518°F)
Max. Solder Time	5 seconds
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 seconds
Weight	8 grams

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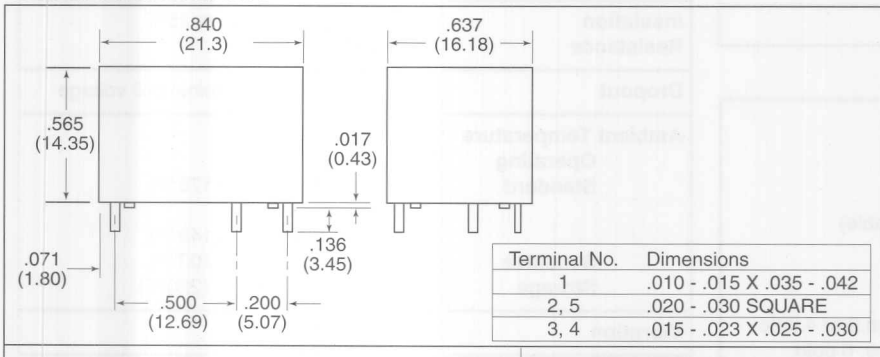
RELAY ORDERING DATA

COIL SPECIFICATIONS				ORDER NUMBER*			
STANDARD RELAYS: 1 Form C (SPDT)				LIGHT DUTY (3 Amp contact)		MEDIUM DUTY (6 Amp contact)	
Nominal Coil VDC	Max. VDC Continuous	Resistance ± 10%	Must Operate VDC	Unsealed	Epoxy Sealed	Unsealed	Epoxy Sealed
5	10.6	56	3.25	AZ8–1C–5D	AZ8–1C–5DE	AZ8–1CH–5D	AZ8–1CH–5DE
6	12.6	80	3.90	AZ8–1C–6D	AZ8–1C–6DE	AZ8–1CH–6D	AZ8–1CH–6DE
9	19.0	180	5.85	AZ8–1C–9D	AZ8–1C–9DE	AZ8–1CH–9D	AZ8–1CH–9DE
12	25.0	320	7.80	AZ8–1C–12D	AZ8–1C–12DE	AZ8–1CH–12D	AZ8–1CH–12DE
24	50.0	1,280	15.60	AZ8–1C–24D	AZ8–1C–24DE	AZ8–1CH–24D	AZ8–1CH–24DE
48	87.0	3,800	28.80	AZ8–1C–48D	AZ8–1C–48DE	AZ8–1CH–48D	AZ8–1CH–48DE
SENSITIVE RELAYS: 1 Form C (SPDT)				LIGHT DUTY (3 Amp contact)		MEDIUM DUTY (6 Amp contact)	
Nominal Coil VDC	Max. VDC Continuous	Resistance ± 10%	Must Operate VDC	Unsealed	Epoxy Sealed	Unsealed	Epoxy Sealed
5	12.6	80	3.25	AZ8–1C–5DS	AZ8–1C–5DSE	AZ8–1CH–5DS	AZ8–1CH–5DSE
6	14.8	110	3.90	AZ8–1C–6DS	AZ8–1C–6DSE	AZ8–1CH–6DS	AZ8–1CH–6DSE
9	22.4	250	5.85	AZ8–1C–9DS	AZ8–1C–9DSE	AZ8–1CH–9DS	AZ8–1CH–9DSE
12	30.0	440	7.80	AZ8–1C–12DS	AZ8–1C–12DSE	AZ8–1CH–12DS	AZ8–1CH–12DSE
24	60.0	1,780	15.60	AZ8–1C–24DS	AZ8–1C–24DSE	AZ8–1CH–24DS	AZ8–1CH–24DSE
STANDARD RELAYS: 1 Form C (SPDT)				HEAVY DUTY (10 Amp contact)			
Nominal Coil VDC	Max. VDC Continuous	Resistance ± 10%	Must Operate VDC	Unsealed		Epoxy Sealed	
5	10.6	56	4.0	AZ8–1CT–5D*		AZ8–1CT–5DE*	
6	12.6	80	4.8	AZ8–1CT–6D		AZ8–1CT–6DE	
9	19.0	180	7.2	AZ8–1CT–9D		AZ8–1CT–9DE	
12	25.0	320	9.6	AZ8–1CT–12D		AZ8–1CT–12DE	
24	50.0	1,280	19.2	AZ8–1CT–24D		AZ8–1CT–24DE	
48	87.0	3,800	38.4	AZ8–1CT–48D		AZ8–1CT–48DE	

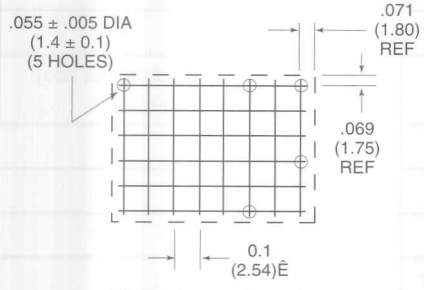
*To indicate Class F version, add suffix "F". Other coil resistances and sensitivities available. Please contact the factory.
Substitute "1AT" in place of "1CT" to indicate 1 Form A.

MECHANICAL DATA



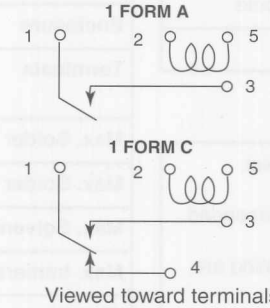
Terminal No.	Dimensions
1	.010 - .015 X .035 - .042
2, 5	.020 - .030 SQUARE
3, 4	.015 - .023 X .025 - .030

PC BOARD LAYOUT



Viewed toward terminals

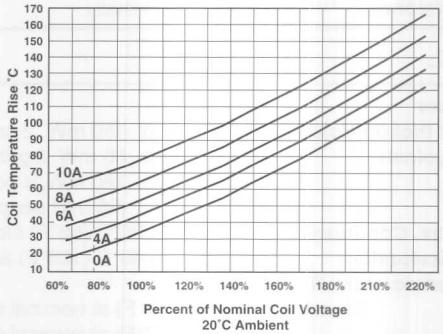
WIRING DIAGRAM



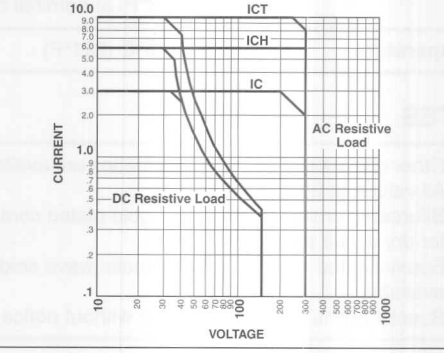
Viewed toward terminals

Dimensions in inches with metric equivalents in parentheses. Tolerance: ± .010"

Coil Temperature Rise



Maximum Switching Capacity



AZ420

MINIATURE GENERAL PURPOSE RELAY

FEATURES

- Rugged construction for high reliability
- Life expectancy greater than 100 million operations
- DC coils to 115 V
- High sensitivity at 25 mW per pole available
- Current sensitive and voltage sensitive coils available
- Round core and larger coil volume provide greater pull force
- Up to 6 poles in less than one cubic inch
- Dry circuit, 2 Amp, 3 Amp or 7.5 Amp contacts
- Printed circuit or solder/plug-in terminals
- Balanced spring-held armature allows dependable operation in any position
- Sealed version available (2 and 4 pole)
- UL, CUR file E43203; VDE 0110 Gr. A

CONTACTS

Arrangement	DPDT (2 Form C) 4PDT (4 Form C) 6PDT (6 Form C)
Ratings	See contact data table under relay ordering data **UL Rating:** See table for UL approved contact ratings
Material	See contact data table under relay ordering data
Resistance	< 50 milliohms initially

COIL

Power	
At Pickup Voltage (typical)	Standard: 450 mW, 2 or 4 pole Sensitive: 80 mW, 2 pole 180 mW, 4 pole (25 mW per pole available)
Max. Continuous Dissipation	2.6 W at 20°C (68°F) ambient 2.0 W at 40°C (105°F) ambient
Temperature Rise	
Standard	23°C (41°F) at nominal coil voltage,2 or 4 pole 40°C (72°F) at nominal coil voltage, 6 pole
Sensitive	5°C (9°F) at nominal coil voltage, 2 pole 10°C (18°F) at nominal coil voltage, 4 pole
Temperature	Max. 105°C (221°F)

NOTES

1. Other coil resistances and sensitivities are available upon request.
2. All values at 20°C (68°F).
3. Bifurcated crossbar, fine silver/gold plated contacts are recommended for dry circuit switching.
4. Epoxy sealed versions for automatic wave soldering and cleaning are available.
5. Specifications subject to change without notice.

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 500 million See typical contact life expectancy table
Operate Time	See typical operate and release time diagram
Release Time	See typical operate and release time diagram
Capacitance (typical)	Contact to contact: 2 pF Contact to coil: 2 pF Contact to frame: 30 pF
Bounce (typical)	At 10 mA contact current 3 ms at nominal coil voltage
Dielectric Strength (at sea level)	1500Vrms contact to coil 1000 Vrms all other points
Insulation Resistance	10.000 megohms min. at 25°C 100 VDC 50% RH
Dropout	Greater than 5% of nominal coil voltage
Ambient Temperature **Operating** **Standard**	At nominal coil voltage 2 and 4 pole type: -55°C (-67°F) to 80°C (176°F) 6 pole type: -55°C (-67°F) to 65°C (149°F)
Sensitive	-55°C (-67°F) to 95°C (203°F)
Storage	-55°C (-67°F) to 105°C (220°F)
Vibration	0.062" DA at 5–55 Hz
Shock	20 g
Enclosure	Polycarbonate
Terminals	Plug-in: gold or tin plated copper alloy PC: tin plated copper alloy
Max. Solder Temp.	270°C (518°F)
Max. Solder Time	5 seconds
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 Seconds
Weight	23 to 35 grams

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RELAY ORDERING DATA — TWO POLE

STANDARD DC VOLTAGE VERSION

COIL SPECIFICATIONS				ORDER NUMBER		
				Unsealed		Sealed
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%	Must Operate VDC	Plug-in/Solder Terminals	PC Terminals	PC Terminals
3	5	14	2.25	AZ420–21–*–	AZ428–21–*–	AZ2428–21–*–
6	10	52	4.5	AZ420–15–*–	AZ428–15–*–	AZ2428–15–*–
12	19	185	9.0	AZ420–1011–*–	AZ428–1011–*–	AZ2428–1011–*–
18	29	430	13.0	AZ420–80–*–	AZ428–80–*–	AZ2428–80–*–
20	34	600	16.0	AZ420–08–*–	AZ428–08–*–	AZ2428–08–*–
24	37	700	18.0	AZ420–70–*–	AZ428–70–*–	AZ2428–70–*–
26	44	1,000	21.0	AZ420–07–*–	AZ428–07–*–	AZ2428–07–*–
48	70	2,500	36.0	AZ420–56–*–	AZ428–56–*–	AZ2428–56–*–
72	105	5,800	54.0	AZ420–40–*–	AZ428–40–*–	AZ2428–40–*–
115	170	15,000	86.0	AZ420–035–*–	AZ428–035–*–	AZ2428–035–*–

B. SENSITIVE DC VOLTAGE VERSION (Pickup 100 mW)

COIL SPECIFICATIONS				ORDER NUMBER		
				Unsealed		Sealed
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%	Must Operate VDC	Plug-in/Solder Terminals	PC Terminals	PC Terminals
3	10	50	2.25	AZ420–V15–*–	AZ428–V15–*–	AZ2428–V15–*–
6	20	200	4.5	AZ420–V10–*–	AZ428–V10–*–	AZ2428–V10–*–
12	41	800	9.0	AZ420–V70–*–	AZ428–V70–*–	AZ2428–V70–*–
24	81	3,200	18.0	AZ420–V50–*–	AZ428–V50–*–	AZ2428–V50–*–
48	104	13,000	36.0	AZ420–V04–*–	AZ428–V04–*–	AZ2428–V04–*–

C. SENSITIVE DC CURRENT VERSION (Pickup 85 mW)

COIL SPECIFICATIONS				ORDER NUMBER		
				Unsealed		Sealed
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%	Must Operate (mA)	Plug-in/Solder Terminals	PC Terminals	PC Terminals
12	44	1,000	8.5	AZ420–C07–*–	AZ428–C07–*–	AZ2428–C07–*–
18	70	2,500	5.4	AZ420–C56–*–	AZ428–C56–*–	AZ2428–C56–*–
29	102	5,000	4.1	AZ420–C045–*–	AZ428–C045–*–	AZ2428–C045–*–
44	144	10,000	3.1	AZ420–C408–*–	AZ428–C408–*–	AZ2428–C408–*–
51	170	15,000	2.4	AZ420–C035–*–	AZ428–C035–*–	AZ2428–C035–*–

*ORDERING PROCEDURE:

To specify an AZ 420 series relay, combine the basic part number found in the Order Number section with a contact code found in the Contact Data Table.

EXAMPLE:
AZ420–21–40LUS:

A. Basic number: **AZ420–21–** indicates two pole, plug-in/solder terminals, standard coil, 3 VDC, 14 ohm coil.

B. Contact code: **40LUS** indicates bifurcated crossbar fine silver/gold plated contacts, Form C, UL and CUR approved.

CONTACT DATA TABLE

Contact Material	Maximum Switched Load	Switching Range at 28 VDC or 115 VAC (Typical)	Contact Material	Maximum Switched Load	Switching Range at 28 VDC or 115 VAC (Typical)	Contact Material	Maximum Switched Load	Switching Range at 28 VDC or 115 VAC (Typical)
40LUS			**4WLUS**			**4WHUS**		
Bifurcated crossbar contact Fine silver/ gold plated	Max. Power: 56 W or 230 VA Max. current: 2 Amps Max. voltage: 150† VDC or 300 VAC	Dry circuit to 2 Amps	Single crossbar contact Moveable: fine silver/ gold plated	Max. power 100 W or 350 VA Max. current 3 Amps Max. voltage 150† VDC or 300 VAC	10 mA to 3 Amps	Single crossbar contact Moveable: silver cad-mium oxide/gold plated	Max. power 225 W or 870 VA Max. current: 7.5 Amps Max. voltage: 150† VDC or 300 VAC	100 mA to 7.5 Amps

RELAY ORDERING DATA — FOUR POLE

A. STANDARD DC VOLTAGE VERSION

COIL SPECIFICATIONS				ORDER NUMBER		
				Unsealed		Sealed
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%	Must Operate VDC	Plug-in/Solder Terminals	PC Terminals	PC Terminals
3	5	14	2.25	AZ421–21–*—	AZ429–21–*—	AZ2429–21–*—
6	10	52	4.5	AZ421–15–*—	AZ429–15–*—	AZ2429–15–*—
12	19	185	9.0	AZ421–1011–*—	AZ429–1011–*—	AZ2429–1011–*—
18	29	430	13.0	AZ421–80–*—	AZ429–80–*—	AZ2429–80–*—
20	34	600	16.0	AZ421–08–*—	AZ429–08–*—	AZ2429–08–*—
24	37	700	18.0	AZ421–70–*—	AZ429–70–*—	AZ2429–70–*—
26	44	1,000	21.0	AZ421–07–*—	AZ429–07–*—	AZ2429–07–*—
48	70	2,500	36.0	AZ421–56–*—	AZ429–56–*—	AZ2429–56–*—
72	105	5,800	54.0	AZ421–40–*—	AZ429–40–*—	AZ2429–40–*—
115	170	15,000	86.0	AZ421–035–*—	AZ429–035–*—	AZ2429–035–*—

B. SENSITIVE DC VOLTAGE VERSION (Pickup 180 mW)

COIL SPECIFICATIONS				ORDER NUMBER		
				Unsealed		Sealed
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%	Must Operate VDC	Plug-in/Solder Terminals	PC Terminals	PC Terminals
3	8	30	2.25	AZ421–V15–*—	AZ429–V15–*—	AZ2429–V15–*—
6	15	110	4.5	AZ421–V10–*—	AZ429–V10–*—	AZ2429–V10–*—
12	30	450	9.0	AZ421–V80–*—	AZ429–V80–*—	AZ2429–V80–*—
24	61	1,800	18.0	AZ421–V05–*—	AZ429–V05–*—	AZ2429–V05–*—
48	124	7,500	36.0	AZ421–V04–*—	AZ429–V04–*—	AZ2429–V04–*—

C. SENSITIVE DC CURRENT VERSION (Pickup 85 mW)

COIL SPECIFICATIONS				ORDER NUMBER		
				Unsealed		Sealed
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%	Must Operate (mA)	Plug-in/Solder Terminals	PC Terminals	PC Terminals
19	44	1,000	13.0	AZ421–C07–*—	AZ429–C07–*—	AZ2429–C07–*—
30	70	2,500	8.3	AZ421–C56–*—	AZ429–C56–*—	AZ2429–C56–*—
44	102	5,000	6.2	AZ421–C045–*—	AZ429–C045–*—	AZ2429–C045–*—
64	144	10,000	4.5	AZ421–C408–*—	AZ429–C408–*—	AZ2429–C408–*—
75	170	15,000	3.5	AZ421–C035–*—	AZ429–C035–*—	AZ2429–C035–*—

*ORDERING PROCEDURE:

To specify an AZ 421 series relay, combine the basic part number found in the Order Number section with a contact code found in the Contact Data Table.

EXAMPLE:
AZ421–21–10LUS:

A. Basic number: **AZ421–21–** indicates four pole, plugin/solder terminals, standard coil, 3 VDC, 14 ohm coil.

B. Contact code: **10LUS** indicates bifurcated crossbar fine silver/gold plated contacts, Form C, UL and CUR approved.

CONTACT DATA TABLE

Contact Material	Maximum Switched Load	Switching Range at 28 VDC or 115 VAC (Typical)	Contact Material	Maximum Switched Load	Switching Range at 28 VDC or 115 VAC (Typical)	Contact Material	Maximum Switched Load	Switching Range at 28 VDC or 115 VAC (Typical)
10LUS			**1WLUS**			**1WHUS**		
Bifurcated crossbar contact Fine silver/ gold plated	Max. Power: 56 W or 230 VA Max. current: 2 Amps Max. voltage: 150† VDC or 300 VAC	Dry circuit to 2 Amps	Single crossbar contact Moveable: fine silver/ gold plated	Max. power 100 W or 350 VA Max. current 3 Amps Max. voltage 150† VDC or 300 VAC	10 mA to 3 Amps	Single crossbar contact Moveable: silver cad-mium oxide/gold plated	Max. power 225 W or 870 VA Max. current: 7.5 Amps Max. voltage: 150† VDC or 300 VAC	100 mA to 7.5 Amps

† If switching voltage is greater than 30 VDC, special precautions must be taken. Contact the factory.

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RELAY ORDERING DATA — SIX POLE

A. STANDARD DC COIL VOLTAGE VERSION

COIL SPECIFICATIONS				ORDER NUMBER	
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%	Must Operate VDC	Plug-in/ Solder Terminals	PC Terminals
3	4.5	11	2.25	AZ431–22–*—	AZ439–22–*—
6	7	25	4.5	AZ431–18–*—	AZ439–18–*—
12	14	90	9.0	AZ431–13–*—	AZ439–13–*—
18	22	230	13.0	AZ431–10–*—	AZ439–10–*—
20	26	360	16.0	AZ431–09–*—	AZ439–09–*—
24	29	430	18.0	AZ431–80–*—	AZ439–80–*—
26	34	600	21.0	AZ431–08–*—	AZ439–08–*—
48	59	1,800	36.0	AZ431–06–*—	AZ439–06–*—
72	83	3,600	54.0	AZ431–05–*—	AZ439–05–*—
115	130	9,000	86.0	AZ431–04–*—	AZ439–04–*—

B. SENSITIVE DC VOLTAGE VERSION (Pickup 250 mW)

COIL SPECIFICATIONS				ORDER NUMBER	
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%	Must Operate VDC	Plug-in/ Solder Terminals	PC Terminals
3	6	20	2.25	AZ431–V19–*—	AZ439–V19–*—
6	13	80	4.5	AZ431–V13–*—	AZ439–V13–*—
12	26	320	9.0	AZ431–V09–*—	AZ439–V09–*—
24	50	1,200	18.0	AZ431–V60–*—	AZ439–V60–*—
48	68	5,200	36.0	AZ431–V045–*—	AZ439–V045–*—

C. SENSITIVE DC CURRENT VERSION (Pickup 250 mW)

COIL SPECIFICATIONS				ORDER NUMBER	
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%	Must Operate (mA)	Plug-in/ Solder Terminals	PC Terminals
23	44	1,000	16.0	AZ431–C07–*—	AZ439–C07–*—
36	70	2,500	10.0	AZ431–C56–*—	AZ439–C56–*—
51	102	5,000	7.2	AZ431–C045–*—	AZ439–C045–*—
71	144	10,000	5.0	AZ431–C408–*—	AZ439–C408–*—
90	170	15,000	4.2	AZ431–C035–*—	AZ439–C035–*—

*ORDERING PROCEDURE:

To specify an AZ 431 series relay, combine the basic part number found in the Order Number section with a contact code found in the Contact Data Table.

EXAMPLE: **AZ431–22–10LUS:**

A. Basic number: **AZ431–22–** indicates six pole, plug-in/ solder terminals, standard coil, 3 VDC, 11 ohm coil.

B. Contact code: **10LUS** indicates bifurcated crossbar fine silver/gold plated contacts, Form C, UL and CUR approved.

CONTACT DATA TABLE

Contact Material (Typical)	Maximum Switched Load	Switching Range at 28 VDC or 115 VAC
10LUS		
Bifurcated crossbar contact Fine silver/ gold plated	Max. Power: 56 W or 230 VA Max. current: 2 Amps Max. voltage: 150† VDC or 300 VAC	Dry circuit to 2 Amps
1WLUS *		
Single crossbar contact Moveable: fine silver/ gold plated	Max. power: 100 W or 350 VA Max. current: 3 Amps Max. voltage: 150† VDC or 300 VAC	10 mA to 3 Amps
1LUS **		
Single contact button Fine silver/ gold plated	Max. power: 56 W or 230 VA Max. current: 2 Amps Max. voltage: 150† VDC or 300 VAC	Low level to 2 Amps
1WHUS *		
Single crossbar contact Moveable: silver cadmium oxide/gold plated	Max. power: 225 W or 870 VA Max. current: 7.5 Amps Max. voltage: 150† VDC or 300 VAC	100 mA to 7.5 Amps
1HUS **		
Single contact button Silver cadmium oxide	Max. power: 140 W or 575 VA Max. current: 5 Amps Max. voltage: 150† VDC or 300 VAC	100 mA to 5 Amps

* Contact for Standard DC Voltage version only (Table A).

** Contact code for Sensitive DC Voltage version only (Table B) and sensitive DC current version.

† If switching voltage is greater than 30 VDC, special precautions must be taken. Contact the factory.

TYPICAL CONTACT LIFE EXPECTANCY WHILE SWITCHING RESISTIVE LOADS

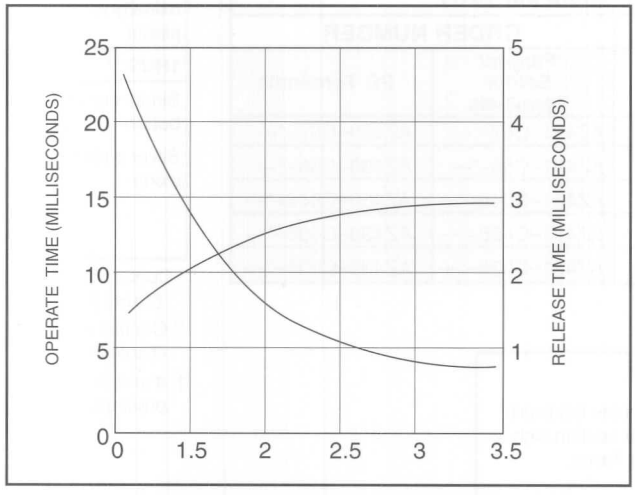
CONTACT CODE	CURRENT	VOLTAGE	NUMBER OF OPERATIONS	
			STANDARD COIL ADJUSTMENT	SENSITIVE COIL ADJUSTMENT
—LUS	1 MA	.1 VDC	1×10^8	1×10^8
	10 MA	6 VDC	1×10^8	1×10^8
	2 A	28 VDC	6×10^5	5×10^5
	2 A	115 VAC	6×10^5	5×10^5
—WLUS	10 MA	28 VDC	2×10^8	2×10^8
	100 MA	28 VDC	2×10^8	2×10^8
	2 A	28 VDC	1.5×10^6	6×10^5
	2 A	115 VAC	1.5×10^6	6×10^5
	3 A	28 VDC	3×10^5	2×10^5
	3A	115 VAC	3×10^5	2×10^5
—WHUS	7.5 A	28 VDC	1×10^5	1×10^4
	7.5 A	115 VDC	1×10^5	1×10^4

NOTE: Relays operate at nominal coil voltage or 1.33 x must operate value for sensitive versions.

UL APPROVED CONTACT RATINGS

CONTACT CODE	UL RATINGS
40LUS, 10LUS	2 Amps at 26 VDC and 115 VAC
4WLUS, 1WLUS	3 Amps at 28 VDC and 115 VAC
4WHUS, 1WHUS	7.5 Amps at 28 VDC and 115 VAC

TYPICAL OPERATE AND RELEASE TIME (STANDARD DC VOLTAGE VERSION)



MULTIPLE OF MUST OPERATE VOLTAGE

NOTES: 1. Coils not arc suppressed
2. Switched battery voltage source

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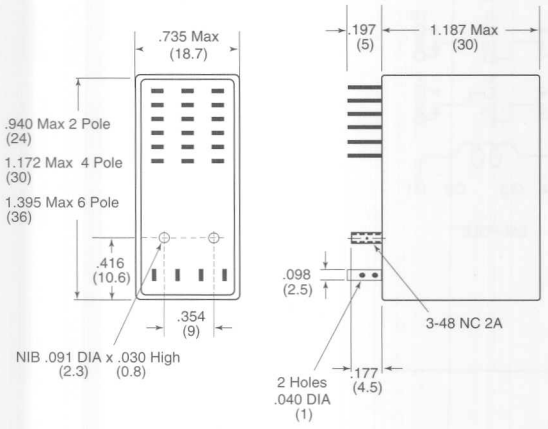
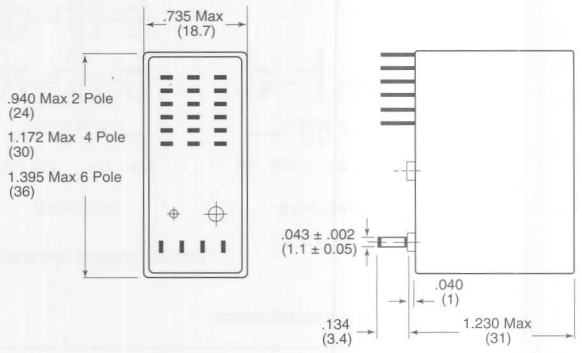
MECHANICAL DATA

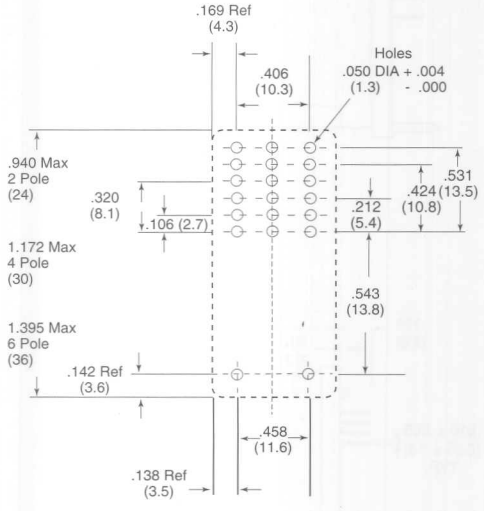
SOLDER/PLUG IN TERMINALS



PC BOARD TERMINALS

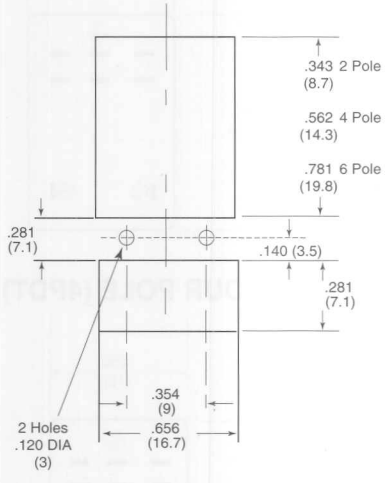


PC BOARD LAYOUT



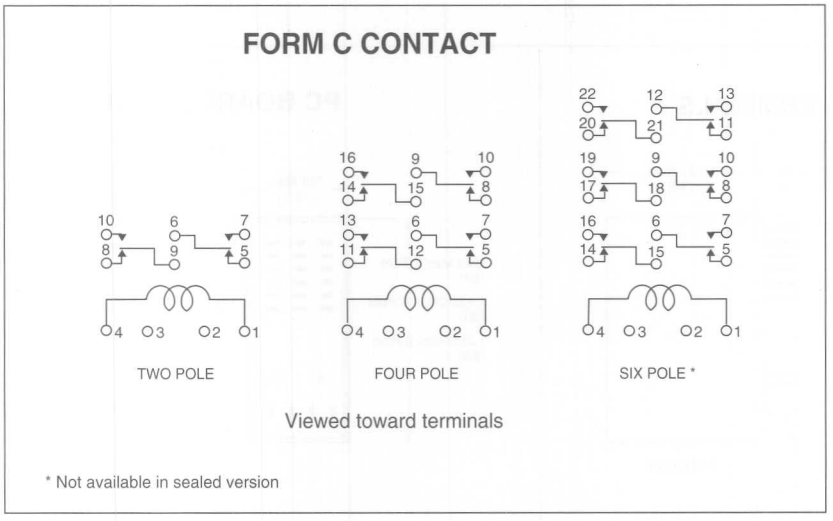
Viewed toward terminals

SUGGESTED PANEL LAYOUT



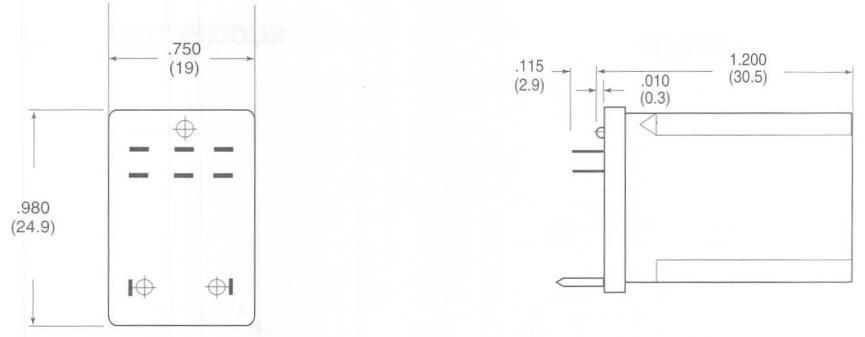
Dimensions in inches with metric equivalents in parentheses. Tolerance: ± .010"

WIRING DIAGRAM

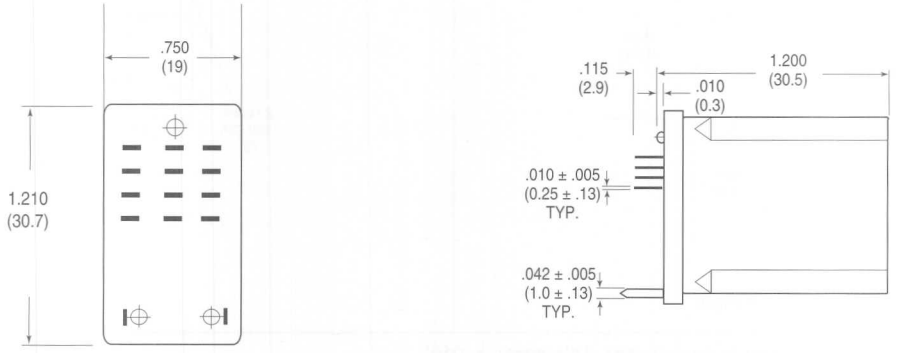


MECHANICAL DATA AZ2428; 2429 Versions

1. TWO POLE (DPDT)



2. FOUR POLE (4PDT)



Dimensions in inches with metric equivalents in parentheses. Tolerance: ± .010"

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Sockets & Hardware for AZ420 Series

FEATURES

- International standard spacing — accommodates most cradle-type relays
- Unique knife-edge connector assures positive contact
- Unbreakable fiberglass filled polyester base material
- Spacing riser prevents flux contamination
- PC terminal spacing for 0.1 or 0.2 inch grids
- UL CUR file E171533

ORDERING DATA

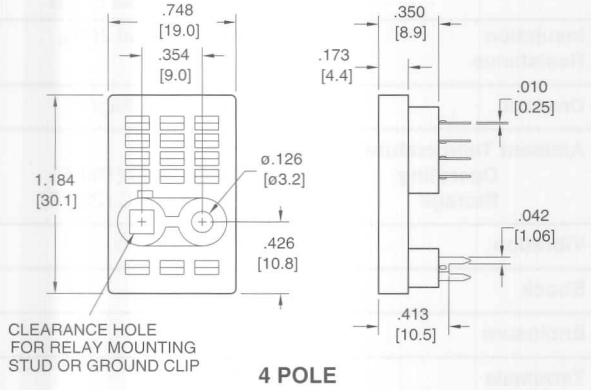
# OF POLES	SOCKET	RETAINING CLIPS
2	ST140–A1	ST140–1
4	ST141–A1	ST141–1

GENERAL DATA

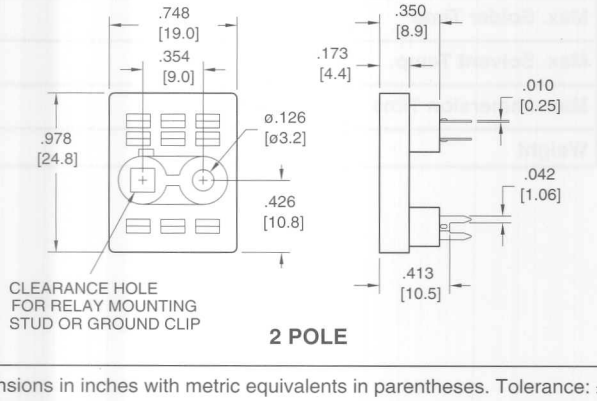
Dielectric Strength (at sea level)	1500 Vrms between all elements
Insulation Resistance	10^{12} ohms minimum at 25°C, 100 VDC
Current Rating	5 Amps maximum, continuous
Ambient Temperature	-55°C (-67°F) to 105°C (220°F)
Maximum Temperature	Machine soldering: 240°C (460°F)
Vibration	10 g at 5–55 Hz (socket soldered into PC board with relay inserted and held in place with retainer)
Shock	50 g any position (socket soldered into PC board with relay inserted and held in place with retainer)
Terminals	Combination type facilitates hand wiring or PC board mounting
Contact Material	Tin bronze silver plated

MECHANICAL SPECIFICATIONS

MECHANICAL DATA

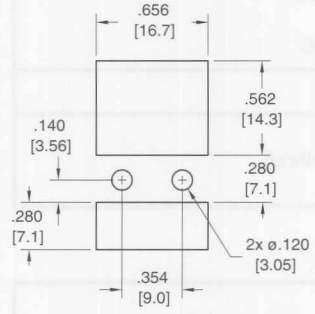


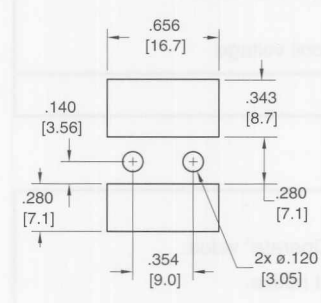
4 POLE



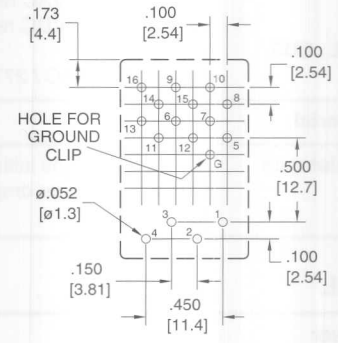
2 POLE

PANEL LAYOUT

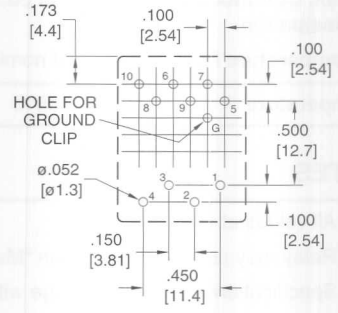




PC BOARD LAYOUT



VIEWED TOWARD TERMINALS



VIEWED TOWARD TERMINALS

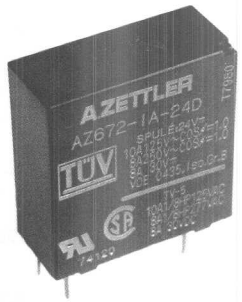
Dimensions in inches with metric equivalents in parentheses. Tolerance: ± .010"

AZ672

MINIATURE POWER RELAY

FEATURES

- Compact size for dense PCB layouts
- High power contacts (10A) for use in consumer appliances, HVAC, TV
- Withstands surges of up to 10,000 volts
- Epoxy sealed version available
- UL file E44211; CSA file LR74120
- TÜV file BL980934205001



CONTACTS

Arrangement	SPST – NO
Ratings	Non - inductive load: Max. switched power: 240 W or 2000 VA Max. switched current: 8A (DC), 10A (AC) Max. switched voltage: 100* VDC or 250 VAC *Note: If switching voltage is greater than 30 VDC, special precautions must be taken. Please contact the factory.
Rated Load **UL, CUR, TÜV** **UL, CUR**	 10 A at 125 VAC resistive 8 A at 250 VAC resistive 8 A at 30 VDC resistive TV5 1/8 HP, 125 VAC / 277 VAC
Material	Silver Alloy
Resistance	< 100 milliohms initially (6 V, 1A voltage drop method)

COIL

Power	
At Pickup Voltage (typical)	300 mW
Max. Continuous Dissipation	995 W at 20°C (68°F) ambient
Temperature Rise	45°C at nominal coil voltage
Temperature	Max. 105°C

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Specifications subject to change without notice.
4. Specifications subject to change without notice.

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	 2 x 10^6 1 x 10^5 at rated load
Operate Time (typical)	10 ms at nominal coil voltage
Release Time (typical)	6 ms at nominal coil voltage (with no coil suppression)
Dielectric Strength (at sea level for 1 min.)	1000 Vrms contact to contact 4000 Vrms contact to coil 10,000 V surge contact to coil
Insulation Resistance	1000 megohms min. at 20°C, 500 VDC, 50% RH
Dropout	5% of nominal coil voltage
Ambient Temperature **Operating** **Storage**	 -40°C (-40°F) to 70°C (158°F) -40°C (-40°F) to 105°C (221°F)
Vibration	1.5mm DA at 10–55 Hz
Shock	10 g
Enclosure	Plastic
Terminals	PC, tinned
Max. Solder Temp.	250°C (482°F)
Max. Solder Time	5 seconds
Max. Solvent Temp.	80°C
Max. Immersion Time	30 seconds
Weight	12 grams (approx.)

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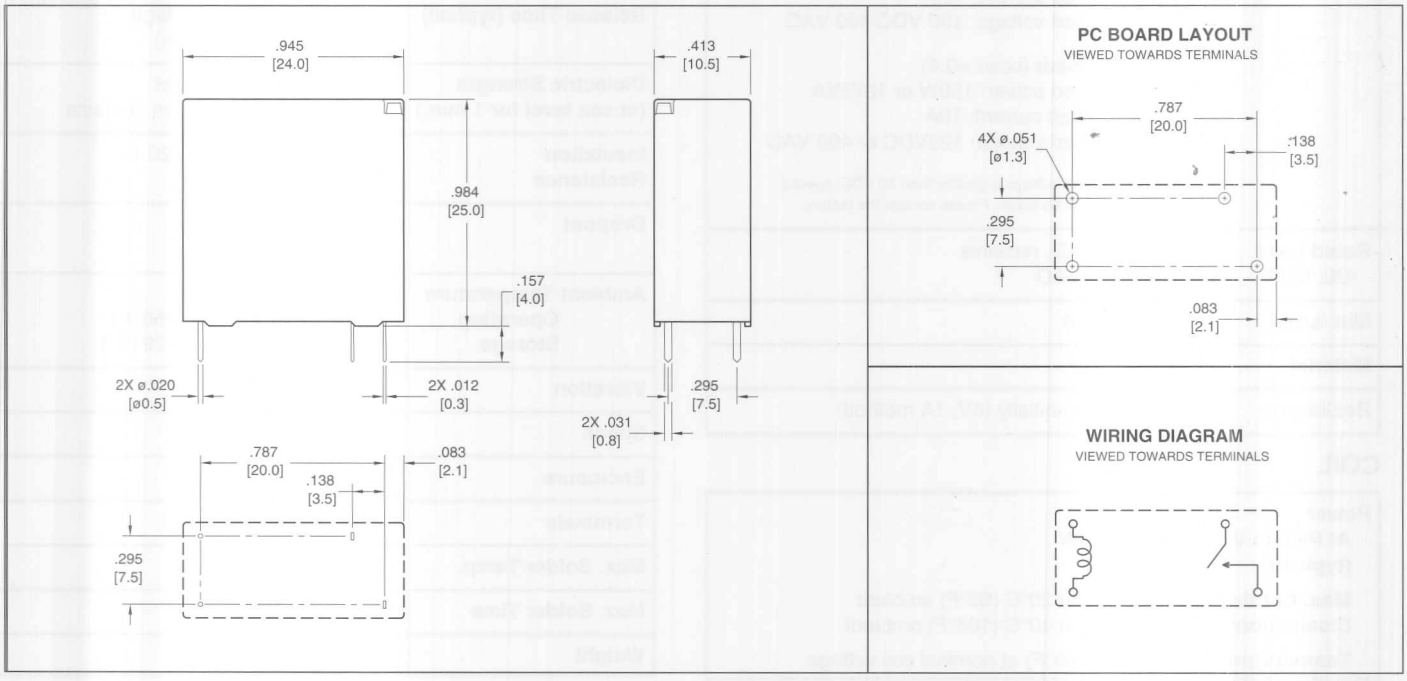
RELAY ORDERING DATA

COIL SPECIFICATIONS — STANDARD RELAY				ORDER NUMBER	
Nominal Coil VDC	Must Operate VDC	Max. Continuous VDC	Coil Resistance ±10%	Unsealed	Sealed
3	2.25	3.9	17	AZ672–1A–3D	AZ672–1A–3DE
5	3.75	6.5	47.2	AZ672–1A–5D	AZ672–1A–5DE
6	4.5	7.8	67.9	AZ672–1A–6D	AZ672–1A–6DE
9	6.75	11.7	153	AZ672–1A–9D	AZ672–1A–9DE
12	9	15.6	272	AZ672–1A–12D	AZ672–1A–12DE
24	18	31.2	1,090	AZ672–1A–24D	AZ672–1A–24DE
48	36	62.4	4,350	AZ672–1A–48D	AZ672–1A–48DE

MECHANICAL DATA



AZ683

MINIATURE POWER RELAY

FEATURES

- AC coils
- Dielectric strength 5000 Vrms
- Low cost
- Flux tight package
- 10 Amp switching - single pole contacts
- Isolation spacing greater than 8mm
- Molded materials: all 94V-0
- UL and Canadian file E43203

CONTACTS

Arrangement	SPST (1 Form A) SPDT (1 Form C)
Ratings	**Resistive load:** Max. switched power: 300 W, 2500 VA Max. switched current: 10 A Max. switched voltage: 150 VDC/400 VAC **Inductive load:** (cosø =0.4) Max. switched power: 150W or 1875VA Max. Switched current: 10A Max. switched voltage: 125VDC or 400 VAC Note: If switching voltage is greater than 30 VDC, special precautions must be taken. Please contact the factory.
Rated Load **UL, CUR**	10 A 250 VAC, resistive 1/2 HP 277 VAC
Min. Load	5 VDC, .01 A
Material	Silver alloy
Resistance	30 milliohms initially (6V, 1A method)

COIL

Power	
At Pickup Voltage (typical)	576 mW
Max. Continuous Dissipation	1.5 W at 20°C (68°F) ambient 1.2 W at 40°C (104°F) ambient
Temperature Rise	36°C (65°F) at nominal coil voltage
Temperature	Max. 105°C (221°F)

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Specifications subject to change without notice.

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 1 x 10^7 1 x 10^5 at rated load
Operate Time (typical)	8 ms at nominal coil voltage
Release Time (typical)	5 ms at nominal coil voltage (with no coil suppression)
Dielectric Strength (at sea level for 1 min.)	5000 Vrms coil to contact 1000 Vrms between open contacts
Insulation Resistance	1000 megohms min. at 20°C, 500 VDC 50% RH
Dropout	Greater than 30% of nominal coil voltage
Ambient Temperature **Operating** **Storage**	At nominal coil voltage -40°C (-40°F) to 70°C (158°F) -40°C (-40°F) to 105°C (221°F)
Vibration	0.062" DA at 10–55 Hz
Shock	10 g
Enclosure	PC (94V-0)
Terminals	Tinned copper alloy, P.C.
Max. Solder Temp.	270°C (518°F)
Max. Solder Time	5 seconds
Weight	17 grams

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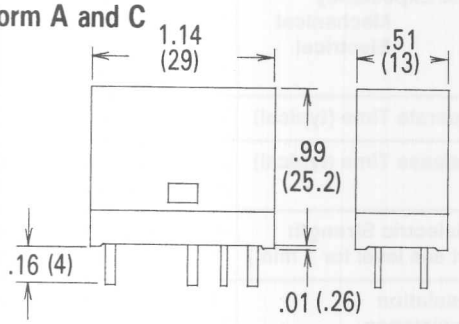
RELAY ORDERING DATA

COIL SPECIFICATIONS - AC Coil					ORDER NUMBER	
Nominal Coil VAC	Must Operate VAC	Max. Continuous VAC	Nominal Current mA ±10%	Coil Resistance ±10%	Form A (SPST)	Form C (SPDT)
6	4.8	7.8	150.0	16	AZ683-1A-6A	AZ683-1C-6A
12	9.6	15.6	75.0	65	AZ683-1A-12A	AZ683-1C-12A
24	19.2	31.2	37.5	260	AZ683-1A-24A	AZ683-1C-24A
50	40.0	65.0	18.0	1130	AZ683-1A-50A	AZ683-1C-50A
110	88.0	143.0	10.6	4600	AZ683-1A-110A	AZ683-1C-110A
220	176.0	286.0	5.3	20200	AZ683-1A-220A	AZ683-1C-220A
230	184.0	299.0	3.6	24900	AZ683-1A-230A	AZ683-1C-230A

MECHANICAL DATA

Form A and C

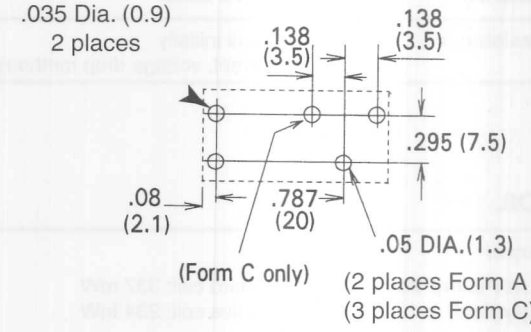


Terminal Number	Dimensions Tol.: ±0.005 (0.13)
1 , 5	.023 (0.58) x .023 (0.58)
2	0.016 (0.4) x 0.040 (1.015)
3	0.017 (0.431) x 0.040 (1.015)
4	0.011 (0.279) x 0.040 (1.015)

Tol.: XX ±0.010 (0.26)

WIRING DIAGRAM
(Bottom View)

PC BOARD LAYOUT
(Bottom View)



Dimensions in inches with metric equivalents in parentheses. Tolerance: ±0.010"

AZ692 / AZ693

10 AMP MINIATURE POWER RELAY

FEATURES

- Isolation spacing greater than 8 mm
- Dielectric strength 4000 Vrms coil to contact
- Approvals/Standards include UL, CSA, VDE, IEC, CEE, SEMKO
- Single pole — Forms A, B, C available
- 10 Amp switching
- Life expectancy to 30 million operations
- Epoxy sealed version for automatic wave soldering and cleaning
- UL file E44211; CSA file LR 85091; VDE 4120–4940–4002/A1

CONTACTS

Arrangement	SPDT (1 Form C) SPST (1 Form A and 1 Form B)
Ratings	Resistive load: Max. switched power: 300 W or 2500 VA Max. switched current: 10 A; 64 A for 2 ms Max. switched voltage: 150* VDC or 380 VAC **UL Rating** 10 A at 24 VDC or 115 VAC 1/4 HP 120 VAC motor load 10 A at 250 VAC B 300 pilot duty * If switching voltage is greater than 30 VDC, special precautions must be taken. Please contact the factory.
Material	Silver cadmium oxide
Resistance	< 30 milliohms initially (at rated current, voltage drop method)

COIL

Power	
At Pickup Voltage (typical)	Standard coil: 337 mW Sensitive coil: 234 mW
Max. Continuous Dissipation	1.9 W at 20°C (68°F) ambient 1.4 W at 40°C (104°F) ambient
Temperature Rise	Standard: 40°C (72°F) at nominal coil voltage Sensitive: 26°C (47°F) at nominal coil voltage
Temperature	Max. 110°C (230°F)

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 30 million operations 1 x 10^5 at 10 A, 30 VDC or 115 VAC 2 x 10^5 at 8 A, 250 VAC
Operate Time (typical)	6 ms at nominal coil voltage
Release Time (typical)	2 ms at nominal coil voltage (with no coil suppression)
Dielectric Strength (at sea level for 1 min.)	4000 Vrms coil to contact 1000 Vrms between open contacts
Insulation Resistance	10,000 megohms min. at 20°C, 500 VDC, 50% RH
Dropout	Greater than 10% of nominal coil voltage
Ambient Temperature **Operating** **Storage**	At nominal coil voltage Standard: -55°C (-67°F) to 70°C (158°F) Sensitive: -55°C (-67°F) to 80°C (176°F) Both: -55°C (-67°F) to 110°C (230°F)
Vibration	0.062" DA at 10–55 Hz
Shock	20 g
Enclosure	P.B.T. polyester
Terminals	Tinned copper alloy, P.C.
Max. Solder Temp.	270°C (518°F)
Max. Solder Time	5 seconds
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 seconds
Weight	17 grams

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Unsealed relays should not be dip cleaned.
4. Specifications subject to change without notice.

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INTERNATIONAL APPROVALS

Passed International Electrical Code IEC 380		**Norway**	NEMKO 55938/M 54234 T
Germany	VDE 0860/8.81 paragraphs 10, 14 VDE 0806/8.81 paragraphs 7, 11, 15, 16, 29 VDE 0631/9.77 paragraphs 9, 12, 14 VDE 0730/T.1/3.72 paragraph 22 VDE 0435/9.72 (with production monitoring)	**Finland**	SEIT 050471–01
		Switzerland	SEV D 3.31/98
		U.S.A.	UL File E44211
Sweden	SEMKO 43–95771/1–2 SEMKO 43–95765/1–2	**Canada**	CSA File LR85091

RELAY ORDERING DATA: Single Pole .138 Spacing

STANDARD RELAYS: 1 Form C (SPDT)

COIL SPECIFICATIONS				ORDER NUMBER*	
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%	Must Operate VDC	Unsealed	Sealed
5	8	38	3.5	AZ692–125–2	AZ2692–125–2
6	10	58	4.2	AZ692–112–2	AZ2692–112–2
12	19	215	8.4	AZ692–08–2	AZ2692–08–2
24	35	740	16.8	AZ692–560–2	AZ2692–560–2
48	74	3,200	33.6	AZ692–04–2	AZ2692–04–2

SENSITIVE RELAYS: 1 Form C (SPDT)

COIL SPECIFICATIONS				ORDER NUMBER*	
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%	Must Operate VDC	Unsealed	Sealed
5	8	47	3.5	AZ692–118–52	AZ2692–118–52
6	10	80	4.2	AZ692–010–52	AZ2692–010–52
12	21	330	8.4	AZ692–071–52	AZ2692–071–52
24	41	1,200	16.8	AZ692–052–52	AZ2692–052–52
48	80	4,700	33.6	AZ692–518–52	AZ2692–518–52

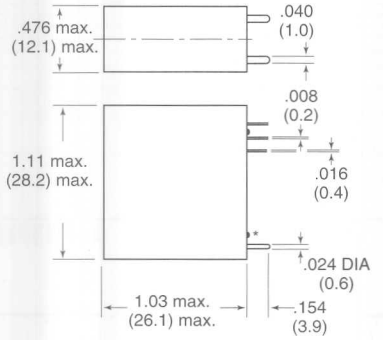
*Substitute "4 or 54," "6 or 56" in place of "2 or 52" to indicate 1 Form A and 1 Form B respectively.

HARDWARE ORDERING DATA — AZ692†

DESCRIPTION	ORDER NUMBER	DESCRIPTION	ORDER NUMBER
Socket	ST482–U1	Retainer	ST482–2

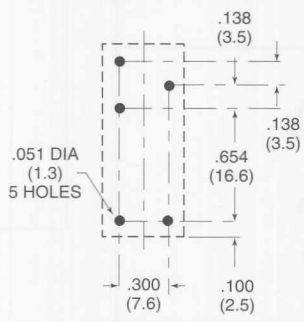
† See following pages for diagram

MECHANICAL DATA

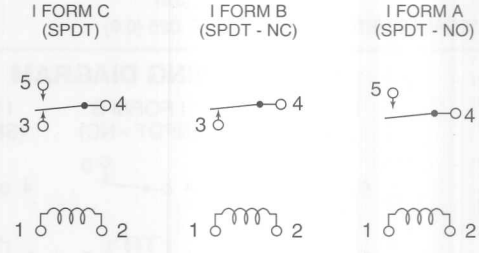


*SEALED VERSION STAND OFF .025 (0.6)

AZ692
PC BOARD LAYOUT
Viewed toward terminals



WIRING DIAGRAM



Viewed toward terminals

Dimensions in inches with metric equivalents in parentheses. Tolerance: ± .010"

AZ692 / AZ693

RELAY ORDERING DATA: Single Pole .100 Spacing

STANDARD RELAYS: 1 Form C (SPDT)					
COIL SPECIFICATIONS				ORDER NUMBER*	
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%	Must Operate VDC	Unsealed	Sealed
5	8	38	3.5	AZ693–125–2	AZ2693–125–2
6	10	58	4.2	AZ693–112–2	AZ2693–112–2
12	19	215	8.4	AZ693–08–2	AZ2693–08–2
24	35	740	16.8	AZ693–560–2	AZ2693–560–2
48	74	3,200	33.6	AZ693–04–2	AZ2693–04–2

SENSITIVE RELAYS: 1 Form C (SPDT)					
COIL SPECIFICATIONS				ORDER NUMBER*	
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%	Must Operate VDC	Unsealed	Sealed
5	8	47	3.5	AZ693–118–52	AZ2693–118–52
6	10	80	4.2	AZ693–010–52	AZ2693–010–52
12	21	330	8.4	AZ693–071–52	AZ2693–071–52
24	41	1,200	16.8	AZ693–052–52	AZ2693–052–52
48	80	4,700	33.6	AZ693–518–52	AZ2693–518–52

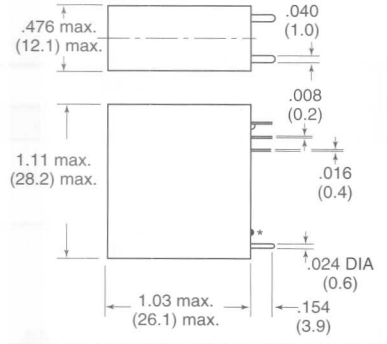
*Substitute "4 or 54," "6 or 56" in place of "2 or 52" to indicate 1 Form A and 1 Form B respectively.

HARDWARE ORDERING DATA — AZ693†

DESCRIPTION	ORDER NUMBER	DESCRIPTION	ORDER NUMBER
Socket	ST483–U1	Retainer	ST482–2

† See following pages for diagram

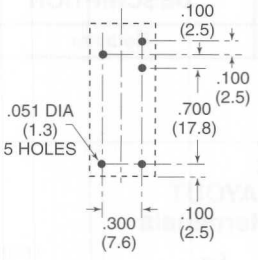
MECHANICAL DATA



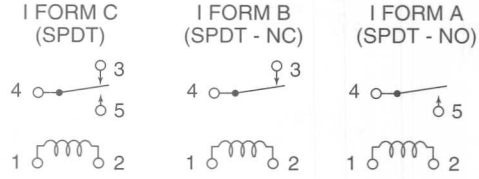
*SEALED VERSION STAND OFF .025 (0.6)

AZ693 PC BOARD LAYOUT

Viewed toward terminals



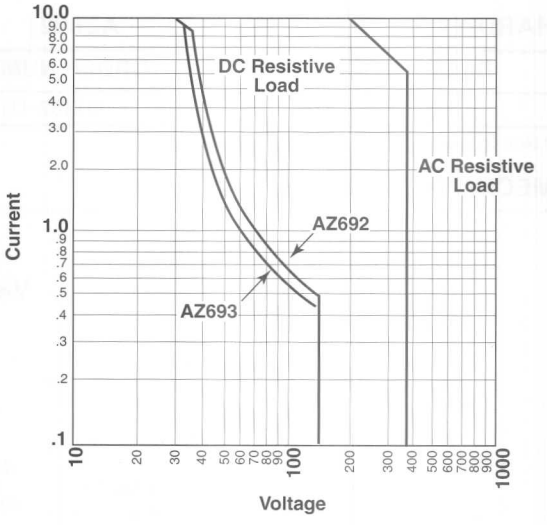
WIRING DIAGRAM



Viewed toward terminals

Dimensions in inches with metric equivalents in parentheses. Tolerance: ± .010"

MAXIMUM SWITCHING CAPACITY



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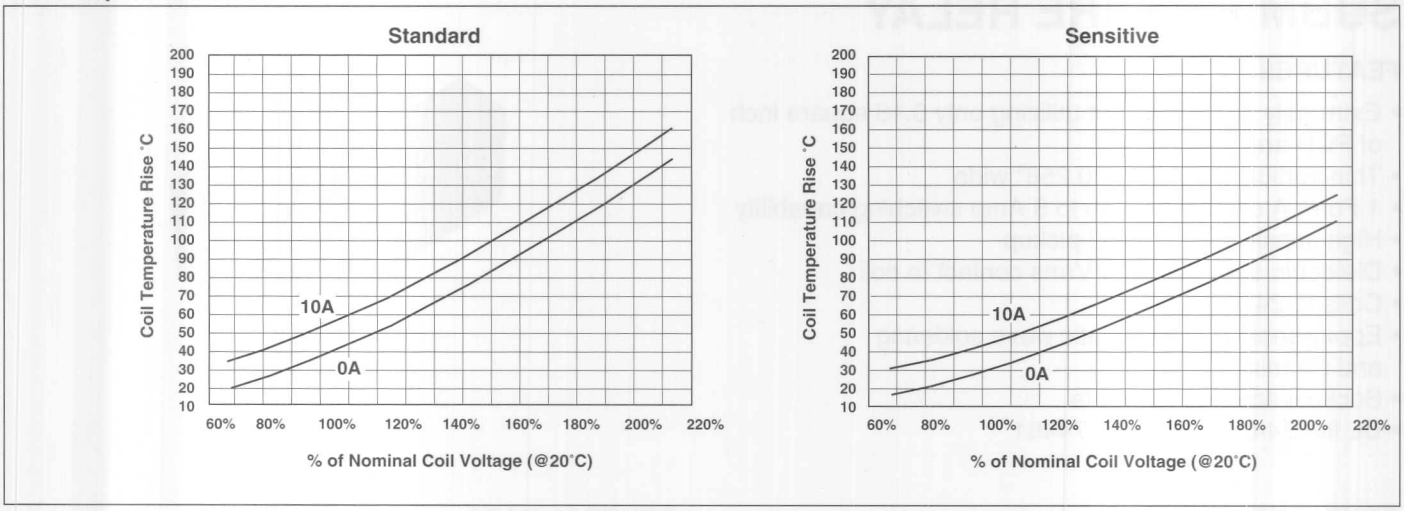
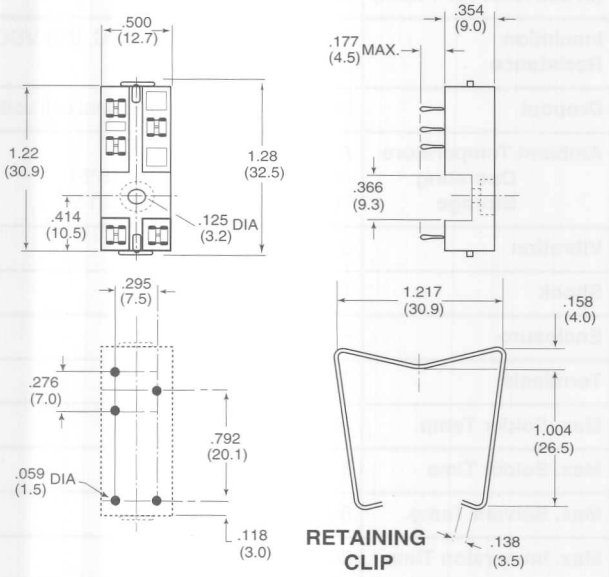
Coil Temperature Rise

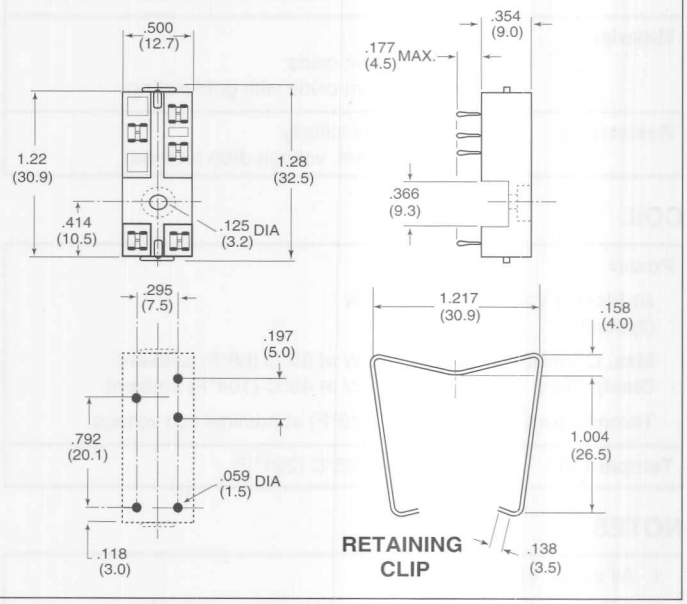


HARDWARE SPECIFICATIONS

ST482-U1 (For use with AZ692 and AZ2692 only)



ST483-U1 (For use with AZ693 and AZ2693 only)



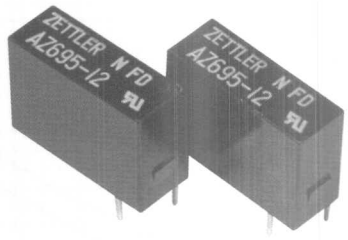
Dimensions in inches with metric equivalents in parentheses. Tolerance: ± .010"

AZ695

SENSITIVE SUBMINIATURE RELAY

FEATURES

- Extremely small footprint utilizing only 0.18 square inch of PCB area
- Thin vertical profile only 0.256" wide
- 1 Form A contact with up to 5 Amp switching capability
- High sensitivity, 100 mW pickup
- Dielectric strength 3000 Vrms contact to coil
- Coils to 24 VDC
- Epoxy sealed for automatic wave soldering and cleaning
- Sockets are also available
- UL file E44211; CSA file 74461



CONTACTS

Arrangement	SPST (1 Form A)
Ratings	Resistive load: Max. switched power: 150 W or 1250 VA Max. switched current: 5 A Max. switched voltage: 150* VDC or 250 VAC **UL Rating:** 5 A at 30 VDC or 250 VAC 1/10 HP 120 VAC Note: If switching voltage is greater than 30 VDC, special precautions must be taken. Please contact the factory.
Material	Options: Silver cadmium oxide Silver cadmium oxide with gold plating
Resistance	< 30 milliohms initially (at rated current, voltage drop method)

COIL

Power	
At Pickup Voltage (typical)	100 mW
Max. Continuous Dissipation	550 mW at 20°C (68°F) ambient 420 mW at 40°C (104°F) ambient
Temperature Rise	25°C (45°F) at nominal coil voltage
Temperature	Max. 105°C (221°F)

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Minimum permissible contact load:
   SCO contact: 100 mA at 5 VDC
   SCO contact with gold plating: 10 mA at 5 VDC
4. Specifications subject to change without notice.

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 20 million operations 1 X 10^5 at 5 A, 30 VDC or 250 VAC
Operate Time (typical)	6 ms at nominal coil voltage
Release Time (typical)	3 ms at nominal coil voltage (with no coil suppression)
Dielectric Strength (at sea level for 1 min.)	750 Vrms between open contacts 3000 Vrms contact to coil
Insulation Resistance	100 megohms min. at 20°C, 500 VDC, 50% RH
Dropout	Greater than 10% of nominal coil voltage
Ambient Temperature **Operating** **Storage**	At nominal coil voltage -40°C (-40°F) to 70°C (158°F) -40°C (-40°F) to 105°C (221°F)
Vibration	0.062" DA at 10–55 Hz
Shock	10 g
Enclosure	P.B.T. polyester
Terminals	Tinned copper alloy, P.C.
Max. Solder Temp.	270°C (518°F)
Max. Solder Time	5 seconds
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 seconds
Weight	3 grams

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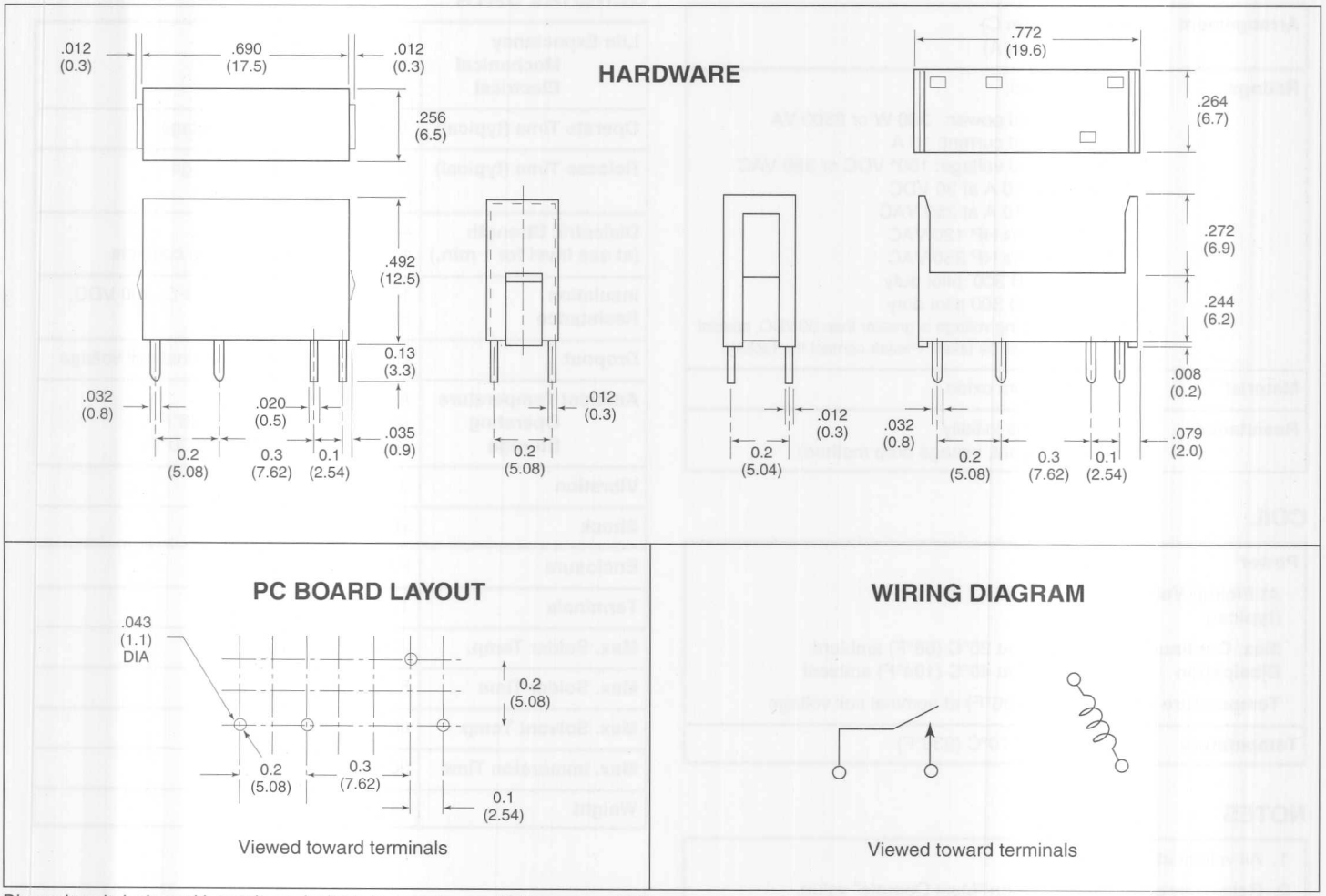
RELAY ORDERING DATA

COIL SPECIFICATIONS				ORDER NUMBER	
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%	Must Operate VDC	SCO Contact	SCO with Gold Plating Contact
5	8.4	125	3.5	AZ695–5	AZ695–5G
6	10.1	180	4.2	AZ695–6	AZ695–6G
9	15.2	405	6.3	AZ695–9	AZ695–9G
12	20.2	720	8.4	AZ695–12	AZ695–12G
18	29.5	1,620	12.6	AZ695–18	AZ695–18G
24	40.5	2,880	16.8	AZ695–24	AZ695–24G

HARDWARE ORDERING DATA

DESCRIPTION	ORDER NUMBER
Socket	ST695

MECHANICAL DATA



Dimensions in inches with metric equivalents in parentheses. Tolerance: ± .010"

AZ696

10 AMP SUBMINIATURE POWER RELAY

FEATURES

- Miniature size: Form A version: 0.63" (16 mm) height, 1.10" (30 mm) length, 0.39" (10 mm) width
- High sensitivity, 100 mW pickup
- Dielectric strength 4000 Vrms
- Isolation spacing greater than 8 mm
- Approvals/Standards include: UL, CSA, VDE, IEC, SEMKO, CEE
- 10 Amp switching capability
- Epoxy sealed for automatic wave soldering and cleaning
- UL file E44211; CSA file LR 85091

CONTACTS

Arrangement	SPDT (1 Form C) SPST (1 Form A)
Ratings	Resistive load: Max. switched power: 300 W or 2500 VA Max. switched current: 10 A Max. switched voltage: 150* VDC or 380 VAC **UL Rating:** 10 A at 30 VDC 10 A at 250 VAC 1/4 HP 120 VAC 1/2 HP 250 VAC B 300 pilot duty Q 300 pilot duty *Note: If switching voltage is greater than 30 VDC, special precautions must be taken. Please contact the factory.
Material	Silver cadmium oxide
Resistance	< 30 milliohms initially (at rated current, voltage drop method)

COIL

Power	
At Pickup Voltage (typical)	100 mW
Max. Continuous Dissipation	1.5 W at 20°C (68°F) ambient 1.2 W at 40°C (104°F) ambient
Temperature Rise	20°C (36°F) at nominal coil voltage
Temperature	Max. 110°C (230°F)

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Specifications subject to change without notice.

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 10 million 1 X 10^5 at rated load
Operate Time (typical)	10 ms at nominal coil voltage
Release Time (typical)	5 ms at nominal coil voltage (with no coil suppression)
Dielectric Strength (at sea level for 1 min.)	4000 Vrms coil to contact 1000 Vrms between open contacts
Insulation Resistance	1000 megohms min. at 20°C, 500 VDC, 50% RH
Dropout	Greater than 10% of nominal coil voltage
Ambient Temperature **Operating** **Storage**	At nominal coil voltage -40°C (-40°F) to 70°C (158°F) -40°C (-40°F) to 110°C (230°F)
Vibration	0.062" DA at 10–55 Hz
Shock	20 g
Enclosure	P.B.T. polyester
Terminals	Tinned copper alloy, P.C.
Max. Solder Temp.	270°C (518°F)
Max. Solder Time	5 seconds
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 seconds
Weight	14 grams

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RELAY ORDERING DATA

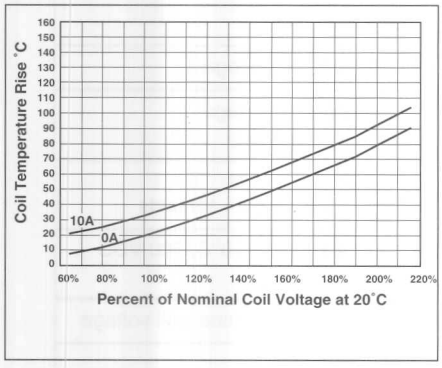
COIL SPECIFICATIONS				ORDER NUMBER	
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%	Must Operate VDC	1 Form A (SPST-NO)	1 Form C (SPDT)
5	12	110	3.5	AZ696–1A–5DE	AZ696–1C–5DE
6	14	160	4.2	AZ696–1A–6DE	AZ696–1C–6DE
12	29	660	8.4	AZ696–1A–12DE	AZ696–1C–12DE
24	54	2,200	16.8	AZ696–1A–24DE	AZ696–1C–24DE
48	102	8,000	33.6	AZ696–1A–48DE	AZ696–1C–48DE

1 form B available upon request. Please contact factory.

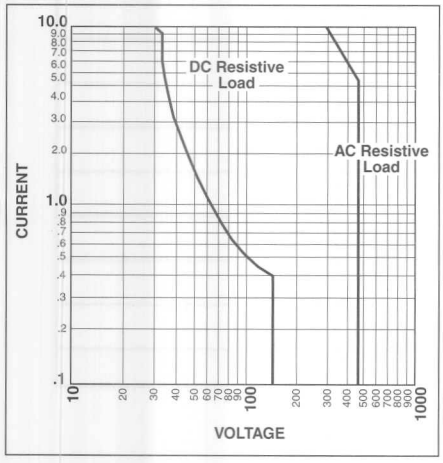
INTERNATIONAL APPROVALS

Germany	VDE 0435/09.72 at 8 Amps VDE 0631/12.83 at 8 Amps VDE 0700/1/2.81 at 8 Amps

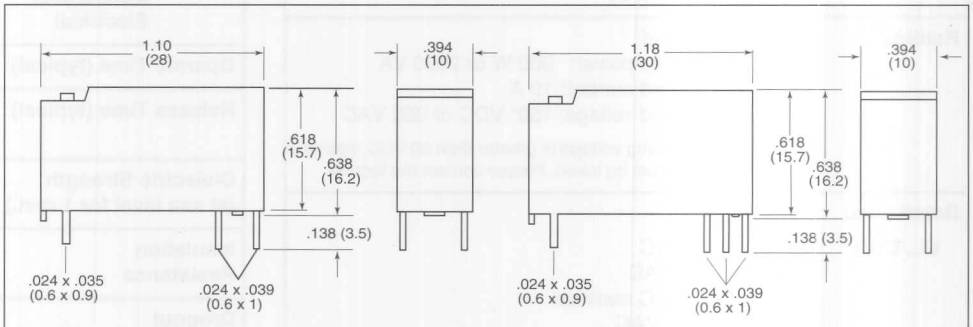
Coil Temperature Rise



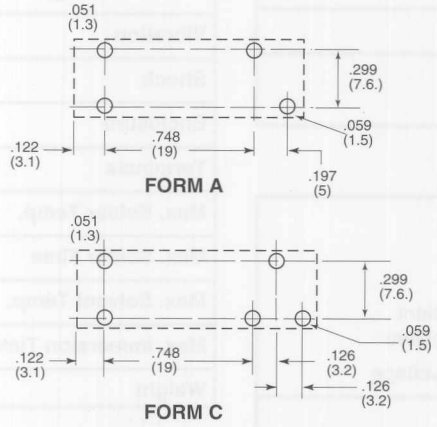
Maximum Switching Capacity



MECHANICAL DATA

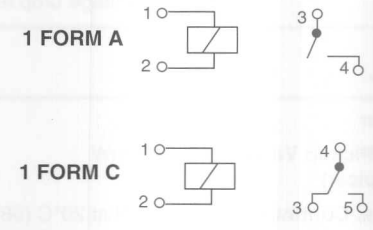


PC BOARD LAYOUT



Viewed toward terminals

WIRING DIAGRAM



Viewed toward terminals

Dimensions in inches with metric equivalents in parentheses. Tolerance: ± .010"

AZ697

10 AMP MINIATURE POWER RELAY

FEATURES

- Dielectric strength 5000 Vrms
- Low cost
- Epoxy sealed version available
- 10 Amp switching — single pole contacts
- UL TV-5
- Isolation spacing greater than 8mm
- UL Class B insulation system
- UL and Canadian file E44211; TÜV file R9659061

CONTACTS

Arrangement	SPST (1 Form A) SPDT (1 Form C)
Ratings	Resistive load: Max. switched power: 300 W or 2500 VA Max. switched current: 10 A Max. switched voltage: 150* VDC or 380 VAC *Note: If switching voltage is greater than 30 VDC, special precautions must be taken. Please contact the factory.
Rated Load	
UL, CUR	TV-5 120 AC 10 A 277 VAC 10 A 30 VDC resistive 1/3 HP 250 VAC 1/4 HP 125 VAC N. O.
TÜV	10 A 250 VAC, 30 VDC
Minimum Load	5 VDC, 0.1 A
Material	Silver alloy
Resistance	< 50 milliohms initially (24 V, 1 A voltage drop method)

COIL

Power	
At Pickup Voltage (typical)	257 mW
Max. Continuous Dissipation	2.3 W at 20°C (68°F) ambient 1.9 W at 40°C (104°F) ambient
Temperature Rise	36°C (65°F) nominal coil voltage
Temperature	Max. 130°C (266°F)

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 1 x 10^7 1 x 10^5 at rated load
Operate Time (typical)	8 ms at nominal coil voltage
Release Time (typical)	5 ms at nominal coil voltage (with no coil suppression)
Dielectric Strength (at sea level for 1 min.)	5000 Vrms coil to contact 1000 Vrms between open contacts
Insulation Resistance	1000 megohms min. at 20°C, 500 VDC 50% RH
Dropout	Greater than 10% of nominal coil voltage
Ambient Temperature **Operating** **Storage**	At nominal coil voltage -40°C (-40°F) to 85°C (185°F) -40°C (-40°F) to 130°C (266°F)
Vibration	0.062" DA at 10–55 Hz
Shock	10 g
Enclosure	P.B.T. polyester
Terminals	Tinned copper alloy, P.C.
Max. Solder Temp.	270°C (518°F)
Max. Solder Time	5 seconds
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 seconds
Weight	18 grams

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Specifications subject to change without notice.

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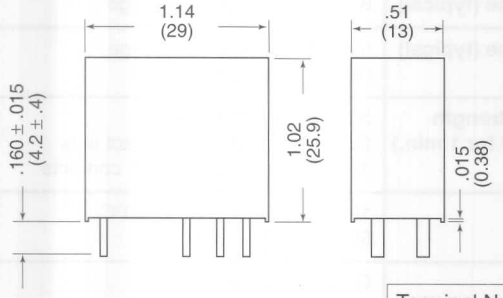
RELAY ORDERING DATA

COIL SPECIFICATIONS				ORDER NUMBER*	
Nominal Coil VDC	Must Operate VDC	Max. Continuous VDC	Coil Resistance	Form A (SPST)	Form C (SPDT)
3	2.1	6.3	17 ±10%	AZ697–1A–3D	AZ697–1C–3D
5	3.5	10.4	47 ±10%	AZ697–1A–5D	AZ697–1C–5D
6	4.2	12.5	68 ±10%	AZ697–1A–6D	AZ697–1C–6D
9	6.3	19.2	160 ±10%	AZ697–1A–9D	AZ697–1C–9D
12	8.4	25.1	275 ±10%	AZ697–1A–12D	AZ697–1C–12D
18	12.6	33.7	650 ±10%	AZ697–1A–18D	AZ697–1C–18D
24	16.8	50.3	1100 ±15%	AZ697–1A–24D	AZ697–1C–24D
48	33.6	97.9	4170 ±15%	AZ697–1A–48D	AZ697–1C–48D
60	42.0	102.0	7000 ±15%	AZ697–1A–60D	AZ697–1C–60D

*Add suffix "E" for epoxy sealed version.

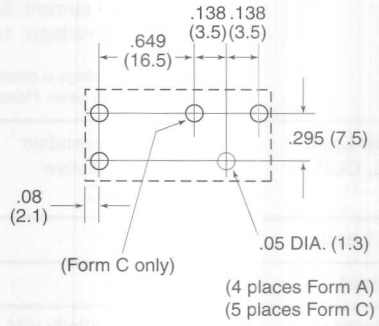
MECHANICAL DATA

Form A and C



Terminal No.	Dimensions Tol.: ± 0.005 (0.13)
1,2,3,5	0.018 (0.457) x 0.038 (0.965)
4	0.011 (0.279) x 0.038 (0.965)

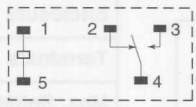
PC BOARD LAYOUT



WIRING DIAGRAM

Form A

Form C



Viewed toward terminals

Viewed toward terminals

Dimensions in inches with metric equivalents in parentheses. Tolerance: ± .010"

AZ723

MINIATURE POWER RELAY

FEATURES

- AC coils
- Dielectric strength 5000 Vrms
- Low cost
- Flux tight package
- 5 Amp switching - double pole contacts
- Isolation spacing greater than 8mm
- Molded materials: all 94V-0
- UL and Canadian file E43203

CONTACTS

Arrangement	DPST (2 Form A) DPDT (2 Form C)
Ratings	**Resistive load:** Max. switched power: 150 W, 1250 VA Max. switched current: 5 A Max. switched voltage: 150 VDC/400 VAC **Inductive load:** (cosø =0.4) Max. switched power: 90W or 500VA Max. Switched current: 5A Max. switched voltage: 125VDC or 400 VAC Note: If switching voltage is greater than 30 VDC, special precautions must be taken. Please contact the factory.
Rated Load **UL, CUR**	5 A 250 VAC, resistive 5 A 30VDC resistive 1/3 HP 240 VAC
Min. Load	5 VDC, .01A
Material	Silver alloy
Resistance	30 milliohms initially (6V, 1A method)

COIL

Power	
At Pickup Voltage (typical)	576 mW
Max. Continuous Dissipation	1.5 W at 20°C (68°F) ambient 1.2 W at 40°C (104°F) ambient
Temperature Rise	36°C (97°F) at nominal coil voltage
Temperature	Max. 105°C (221°F)

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Specifications subject to change without notice.

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 1 x 10^7 1 x 10^5 at rated load
Operate Time (typical)	8 ms at nominal coil voltage
Release Time (typical)	5 ms at nominal coil voltage (with no coil suppression)
Dielectric Strength (at sea level for 1 min.)	5000 Vrms coil to contact 3000 Vrms between contact sets 1000 Vrms between open contacts
Insulation Resistance	1000 megohms min. at 20°C, 500 VDC 50% RH
Dropout	Greater than 30% of nominal coil voltage
Ambient Temperature **Operating** **Storage**	At nominal coil voltage -40°C (-40°F) to 70°C (158°F) -40°C (-40°F) to 105°C (221°F)
Vibration	0.062" DA at 10–55 Hz
Shock	10 g
Enclosure	PC (94V-0)
Terminals	Tinned copper alloy, P.C.
Max. Solder Temp.	270°C (518°F)
Max. Solder Time	5 seconds
Weight	17 grams

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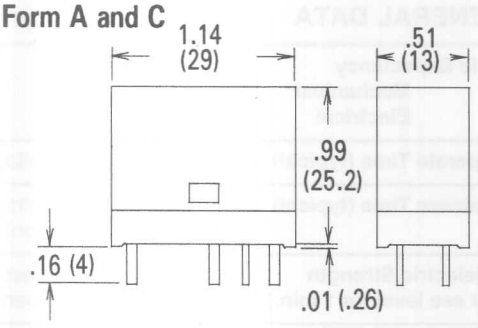
RELAY ORDERING DATA

COIL SPECIFICATIONS - AC Coil					ORDER NUMBER	
Nominal Coil VAC	Must Operate VAC	Max. Continuous VAC	Nominal Current mA ±10%	Coil Resistance ±10%	Form A (DPST)	Form C (DPDT)
6	4.8	7.8	150.0	16	AZ723-2A-6A	AZ723-2C-6A
12	9.6	15.6	75.0	65	AZ723-2A-12A	AZ723-2C-12A
24	19.2	31.2	37.5	260	AZ723-2A-24A	AZ723-2C-24A
50	40.0	65.0	18.0	1130	AZ723-2A-50A	AZ723-2C-50A
110	88.0	143.0	10.6	4600	AZ723-2A-110A	AZ723-2C-110A
220	176.0	286.0	5.3	20200	AZ723-2A-220A	AZ723-2C-220A
230	184.0	299.0	3.6	24900	AZ723-2A-230A	AZ723-2C-230A

MECHANICAL DATA

Form A and C

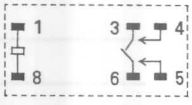


Terminal Number	Dimensions Tol.: ±0.005 (0.13)
1 , 8	.023 (0.58) x .023 (0.58)
2 , 7	0.016 (0.4) x 0.040 (1.015)
3 , 6	0.011 (0.279) x 0.040 (1.015)
4 , 5	0.013 (0.330) x 0.040 (1.015)

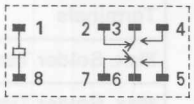
Tol.: XX ±0.010 (0.26)

WIRING DIAGRAM
(Bottom View)

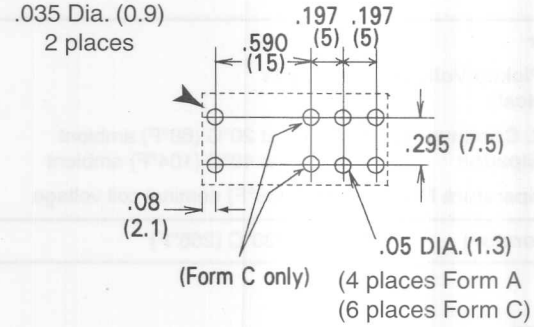
Form A



Form C



PC BOARD LAYOUT
(Bottom View)



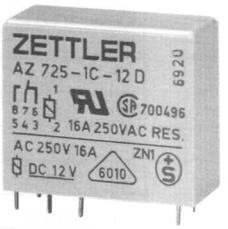
Dimensions in inches with metric equivalents in parentheses. Tolerance: ±0.010"

AZ725

MINIATURE POWER RELAY

FEATURES

- Dielectric strength 5000 Vrms
- 16 Amp switching — single pole contacts
- Isolation spacing greater than 8mm
- Molded materials: all 94 V–0
- VDE 6010 - unsealed version only
- Sealed version available
- UL file E43203; CSA file 700496



CONTACTS

Arrangement	SPST (1 Form A) SPDT (1 Form C)
Ratings	Resistive load: Max. switched power: 384 W or 4000 VA Max. switched current: 16 A Max. switched voltage: 150* VDC or 400 VAC *Note: If switching voltage is greater than 30 VDC, special precautions must be taken. Please contact the factory.
Rated Load **UL, CSA**	16 A at 250 VAC resistive
Minimum Load	5 VDC, 0.1 A
Material	Silver AgCd0
Resistance	< 30 milliohms initially

COIL

Power	
At Pickup Voltage (typical)	270 mW
Max. Continuous Dissipation	2.6 W at 20°C (68°F) ambient 2.0 W at 40°C (104°F) ambient
Temperature Rise	32°C (58°F) nominal coil voltage
Temperature	Max. 130°C (266°F)

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Specifications subject to change without notice.

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 2×10^7 1×10^5 at rated load
Operate Time (typical)	7 ms at nominal coil voltage
Release Time (typical)	3 ms at nominal coil voltage (with no coil suppression)
Dielectric Strength (at sea level for 1 min.)	5000 Vrms coil to contact 1000 Vrms between open contacts
Insulation Resistance	1000 megohms min. at 20°C, 500 VDC, 50% RH
Dropout	Greater than 10% of nominal coil voltage
Ambient Temperature **Operating** **Storage**	At nominal coil voltage -40°C (-40°F) to 85°C (185°F) -40°C (-40°F) to 130°C (266°F)
Vibration	0.062" DA at 10–55 Hz
Shock	10 g
Enclosure	P.B.T. polyester
Terminals	Tinned copper alloy
Max. Solder Temp.	270°C (518°F)
Max. Solder Time	5 seconds
Max. Solvent Temp.	80°C (176°F)
Weight	19 grams

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RELAY ORDERING DATA

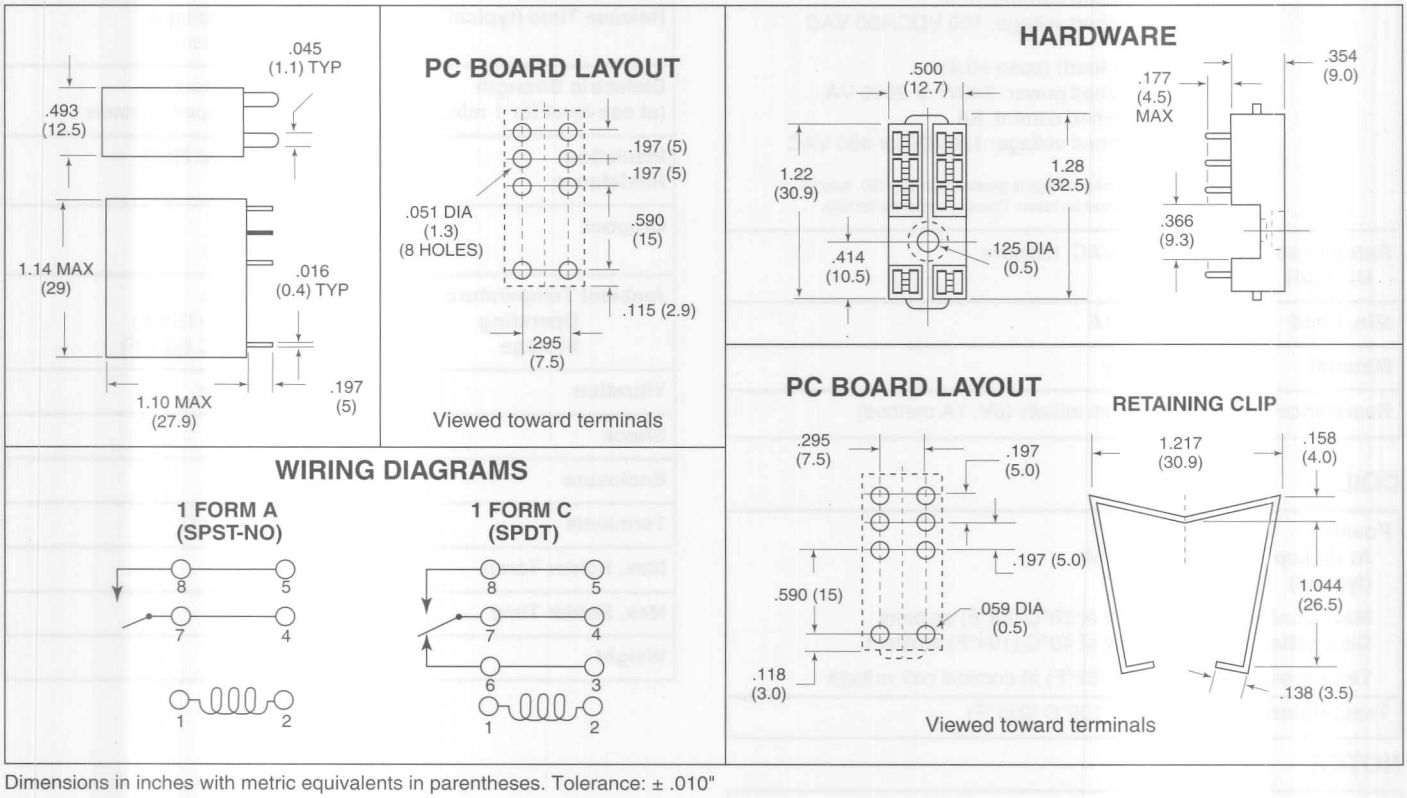
COIL SPECIFICATIONS — DC Coil				ORDER NUMBER*		
Nominal Coil VDC	Must Operate VDC	Max. Continuous VDC	Nominal mA ± 10%	Coil Resistance ±10%	Form A (SPST)	Form C (SPDT)
5	3.5	11.3	102.0	49	AZ725–1A–5D	AZ725–1C–5D
6	4.2	13.3	88.21	68	AZ725–1A–6D	AZ725–1C–6D
12	8.4	26.0	46.2	260	AZ725–1A–12D	AZ725–1C–12D
24	16.8	53.5	21.8	1,100	AZ725–1A–24D	AZ725–1C–24D
48	33.6	107.0	10.9	4,400	AZ725–1A–48D	AZ725–1C–48D
60	42.0	135.0	8.6	7,000	AZ725–1A–60D	AZ725–1C–60D

*Add suffix "E" for epoxy sealed version

HARDWARE ORDERING DATA

DESCRIPTION	ORDER NUMBER
Socket	ST484–U1
Retaining Clip	ST482–2

MECHANICAL DATA



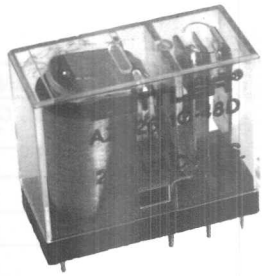
Dimensions in inches with metric equivalents in parentheses. Tolerance: ± .010"

AZ726

MINIATURE POWER RELAY

FEATURES

- AC coils
- Dielectric strength 5000 Vrms
- Low cost
- Flux tight package
- 16 Amp switching - single pole contacts
- Isolation spacing greater than 8mm
- Molded materials: all 94V-0
- UL and Canadian file E43203



CONTACTS

Arrangement	SPST (1 Form A) SPDT (1 Form C)
Ratings	**Resistive load:** Max. switched power: 480 W, 4000 VA Max. switched current: 16 A Max. switched voltage: 150 VDC/400 VAC **Inductive load:** (cosø =0.4) Max. switched power: 240W or 2000 VA Max. Switched current: 8A Max. switched voltage: 125VDC or 400 VAC Note: If switching voltage is greater than 30 VDC, special precautions must be taken. Please contact the factory.
Rated Load UL, CUR	16 A 250 VAC, resistive
Min. Load	5 VDC, .01A
Material	Silver alloy
Resistance	30 milliohms initially (6V, 1A method)

COIL

Power	
At Pickup Voltage (typical)	576 mW
Max. Continuous Dissipation	1.5 W at 20°C (68°F) ambient 1.2 W at 40°C (104°F) ambient
Temperature Rise	36°C (65°F) at nominal coil voltage
Temperature	Max. 105°C (221°F)

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Specifications subject to change without notice.

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 1 x 10^7 1 x 10^5 at rated load
Operate Time (typical)	8 ms at nominal coil voltage
Release Time (typical)	5 ms at nominal coil voltage (with no coil suppression)
Dielectric Strength (at sea level for 1 min.)	5000 Vrms coil to contact 1000 Vrms between open contacts
Insulation Resistance	1000 megohms min. at 20°C, 500 VDC 50% RH
Dropout	Greater than 30% of nominal coil voltage
Ambient Temperature **Operating** **Storage**	At nominal coil voltage -40°C (-40°F) to 70°C (158°F) -40°C (-40°F) to 105°C (221°F)
Vibration	0.062" DA at 10–55 Hz
Shock	10 g
Enclosure	PC (94V-0)
Terminals	Tinned copper alloy, P.C.
Max. Solder Temp.	270°C (518°F)
Max. Solder Time	5 seconds
Weight	17 grams

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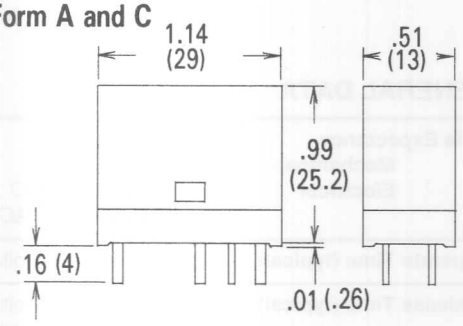
RELAY ORDERING DATA

COIL SPECIFICATIONS - AC Coil					ORDER NUMBER	
Nominal Coil VAC	Must Operate VAC	Max. Continuous VAC	Nominal Current mA ±10%	Coil Resistance ±10%	Form A (SPST)	Form C (SPDT)
6	4.8	7.8	150.0	16	AZ726-1A-6A	AZ726-1C-6A
12	9.6	15.6	75.0	65	AZ726-1A-12A	AZ726-1C-12A
24	19.2	31.2	37.5	260	AZ726-1A-24A	AZ726-1C-24A
50	40.0	65.0	18.0	1130	AZ726-1A-50A	AZ726-1C-50A
110	88.0	143.0	10.6	4600	AZ726-1A-110A	AZ726-1C-110A
220	176.0	286.0	5.3	20200	AZ726-1A-220A	AZ726-1C-220A
230	184.0	299.0	3.6	24900	AZ726-1A-230A	AZ726-1C-230A

MECHANICAL DATA

Form A and C

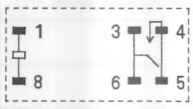


Terminal Number	Dimensions Tol.: ±0.005 (0.13)
1 , 8	.023 (0.58) x .023 (0.58)
2 , 7	0.016 (0.4) x 0.040 (1.015)
3 , 6	0.011 (0.279) x 0.040 (1.015)
4 , 5	0.013 (0.330) x 0.040 (1.015)

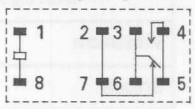
Tol.: XX ±0.010 (0.26)

WIRING DIAGRAM
(Bottom View)

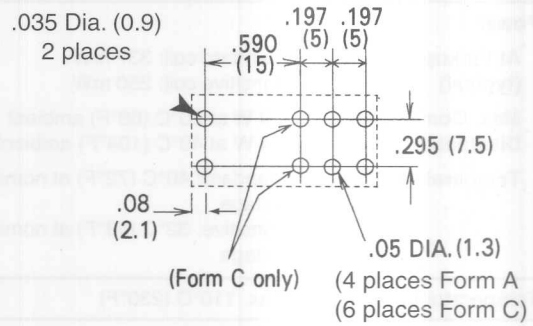
Form A



Form C



PC BOARD LAYOUT
(Bottom View)



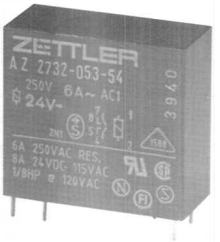
Dimensions in inches with metric equivalents in parentheses. Tolerance: ±0.010"

AZ732

MINIATURE POWER RELAY

FEATURES

- Dielectric strength 4000 Vrms coil to contact
- Isolation spacing greater than 8 mm
- Approvals/Standards include: UL, CSA, VDE, IEC, SEMKO, CEE
- Double pole — Forms A, B, C, available
- 10 Amp switching
- SLIMPAK™ version saves board space
- Epoxy sealed version for automatic wave soldering and cleaning
- UL file E44211; CSA file LR 85091; VDE 4120–4940–4002/A1



CONTACTS

Arrangement	DPDT (2 Form C)
Ratings	Resistive load: Max. switched power: 300 W or 2770 VA Max. switched current: 10 A, 51 A for 2 ms Max. switched voltage: 150* VDC or 400 VAC **UL Rating:** 10 A at 30 VDC or 277 VAC 1/8 HP 120 VAC motor load *Note: If switching voltage is greater than 30 VDC, special precautions must be taken. Please contact the factory.
Material	Silver cadmium oxide
Resistance	< 30 milliohms initially (at rated current, voltage drop method)

COIL

Power	
At Pickup Voltage (typical)	Standard coil: 337 mW Sensitive coil: 250 mW
Max. Continuous Dissipation	1.9 W at 20°C (68°F) ambient 1.4 W at 40°C (104°F) ambient
Temperature Rise	Standard: 40°C (72°F) at nominal coil voltage Sensitive: 32°C (58°F) at nominal coil voltage
Temperature	Max. 110°C (230°F)

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Unsealed relays should not be dip cleaned.
4. Specifications subject to change without notice.

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 30 million 1 x 10^5 at 10 A 30 VDC 1 x 10^5 at 10 A 115 VAC
Operate Time (typical)	7 ms at nominal coil voltage
Release Time (typical)	2 ms at nominal coil voltage (with no coil suppression)
Dielectric Strength (at sea level for 1 min.)	4000 Vrms contacts to coil 2500 Vrms contact to contact 1000 Vrms between open contacts
Insulation Resistance	10,000 megohms min. at 20°C, 500 VDC, 50% RH
Dropout	Greater than 10% of nominal coil voltage
Ambient Temperature **Operating** **Storage**	At nominal coil voltage Standard: -55°C (-67°F) to 70°C (158°F) Sensitive: -55°C (-67°F) to 80°C (176°F) Both: -55°C (-67°F) to 110°C (230°F)
Vibration	0.062" DA at 10–55 Hz
Shock	20 g
Enclosure	P.B.T. polyester
Terminals	Tinned copper alloy, P.C.
Max. Solder Temp.	270°C (518°F)
Max. Solder Time	5 seconds
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 seconds
Weight	20 grams

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RELAY ORDERING DATA

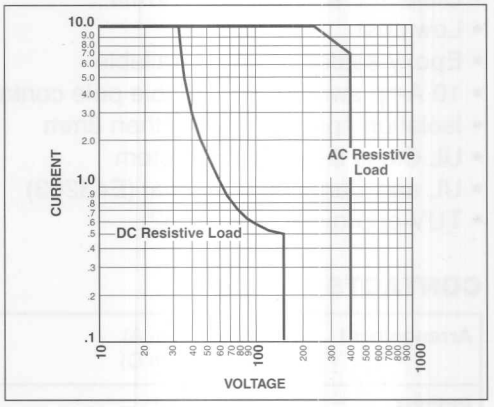
STANDARD RELAYS: 2 Form C (DPDT) Contacts					
COIL SPECIFICATIONS				ORDER NUMBER*	
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%	Must Operate VDC	Unsealed	Sealed
5	8	38	3.5	AZ732–125–2	AZ2732–125–2
6	10	58	4.2	AZ732–112–2	AZ2732–112–2
12	19	215	8.4	AZ732–08–2	AZ2732–08–2
24	35	740	16.8	AZ732–560–2	AZ2732–560–2
48	74	3,200	33.6	AZ732–04–2	AZ2732–04–2
SENSITIVE RELAYS: 2 Form C (DPDT) Contacts					
5	9	47	3.5	AZ732–118–52	AZ2732–118–52
6	11	70	4.2	AZ732–509–52	AZ2732–509–52
12	21	270	8.4	AZ732–521–52	AZ2732–521–52
24	43	1,100	16.8	AZ732–053–52	AZ2732–053–52
48	86	4,400	33.6	AZ732–510–52	AZ2732–510–52

* Substitute "4 or 54," "6 or 56" in place of "2 or 52" to indicate 2 Form A and 2 Form B respectively.

HARDWARE ORDERING DATA

DESCRIPTION	ORDER NUMBER
Socket	ST484–U1
Retaining Clip	ST482–2

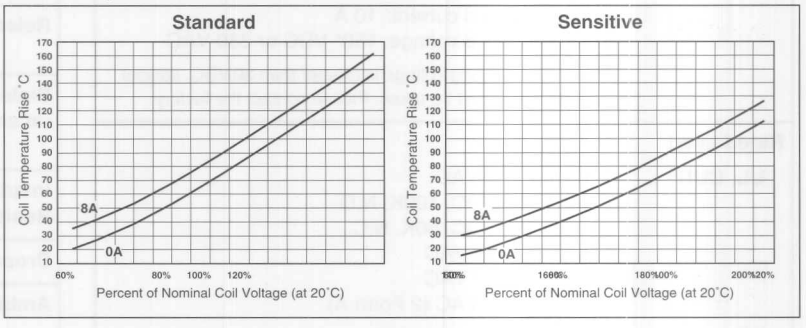
Maximum Switching Capacity



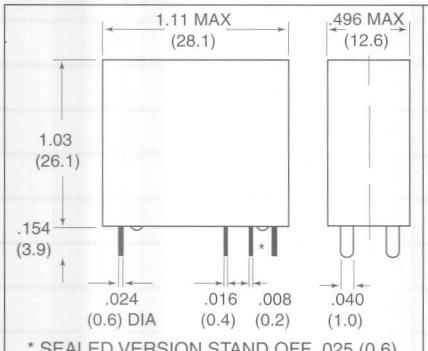
INTERNATIONAL APPROVALS

Passed International Electrical Code IEC 380	
Germany	VDE 0860/8.81 paragraphs 10, 14 VDE 0806/8.81 paragraphs 7, 11, 15, 16, 29 VDE 0631/9.77 paragraphs 9, 12, 14 VDE 0730/T.1/3.72 paragraph 22 VDE 0435/9.72 (with production monitoring)
Sweden	SEMKO 43–95772/1
Norway	NEMKO 55938/M 54233 T
Switzerland	SEV D 7.91/377
U.S.A.	UL File E44211
Canada	CSA File LR85091

Coil Temperature Rise

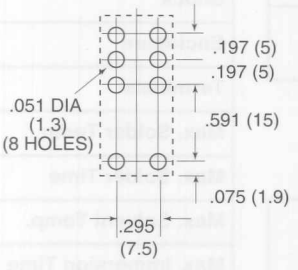


MECHANICAL DATA

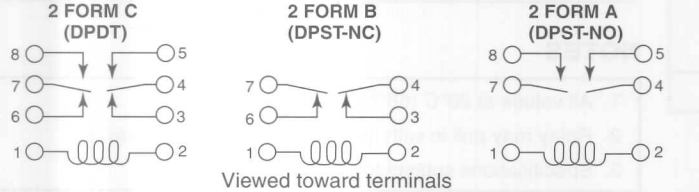


PC BOARD LAYOUT

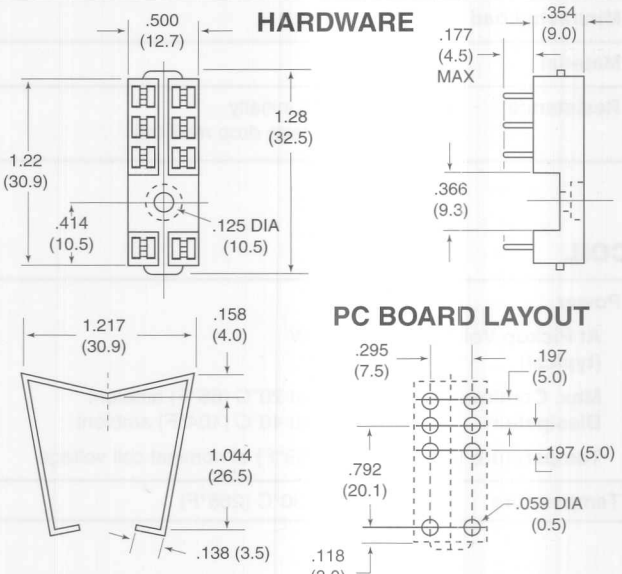
Viewed toward terminals



WIRING DIAGRAMS



HARDWARE



PC BOARD LAYOUT

Dimensions in inches with metric equivalents in parentheses. Tolerance: ± .010"

AZ733

DPDT MINIATURE POWER RELAY

FEATURES

- Dielectric strength 5000 Vrms
- Low cost
- Epoxy sealed version available
- 10 Amp switching — double pole contacts
- Isolation spacing greater than 8mm
- UL Class B insulation system
- UL and Canadian approval (E43203)
- TÜV approved (R9659062)

CONTACTS

Arrangement	DPST (2 Form A) DPDT (2 Form C)
Ratings	Resistive load: Max. switched power: 300 W or 2500 VA Max. switched current: 10 A Max. switched voltage: 150* VDC or 380 VAC *Note: If switching voltage is greater than 30 VDC, special precautions must be taken. Please contact the factory.
Rated Load	
UL, CUR	10 A at 250 VAC 10 A at 30 VDC, 100K, N.O. 10 A at 30 VDC, 50K, N.C. 1/4 HP at 240 VAC 1/8 HP at 120 VAC TV-3 at 125 VAC (2 Form A)
TÜV	5 A at 30VDC, 250 VAC
Minimum Load	5 VDC, 0.1 A
Material	Silver alloy
Resistance	< 50 milliohms initially (24 V, 1 A voltage drop method)

COIL

Power	
At Pickup Voltage (typical)	257 mW
Max. Continuous Dissipation	2.3 W at 20°C (68°F) ambient 1.9 W at 40°C (104°F) ambient
Temperature Rise	33°C (59°F) at nominal coil voltage
Temperature	Max. 130°C (266°F)

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 1 x 10^7 1 x 10^5 at rated load
Operate Time (typical)	8 ms at nominal coil voltage
Release Time (typical)	5 ms at nominal coil voltage (with no coil suppression)
Dielectric Strength (at sea level for 1 min.)	5000 Vrms contact to coil 1000 Vrms between open contacts 3000 Vrms between contact sets
Insulation Resistance	1000 megohms min. at 20°C, 500 VDC, 50% RH
Dropout	Greater than 10% of nominal coil voltage
Ambient Temperature **Operating** **Storage**	 -40°C (-40°F) to 85°C (185°F) -40°C (-40°F) to 130°C (266°F)
Vibration	0.062" DA at 10–55 Hz
Shock	10 g
Enclosure	P.B.T. polyester
Terminals	Tinned copper alloy, P.C.
Max. Solder Temp.	270°C (518°F)
Max. Solder Time	5 seconds
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 seconds
Weight	18 grams

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Specifications subject to change without notice.

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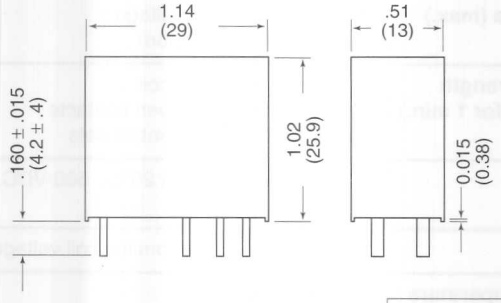
RELAY ORDERING DATA

COIL SPECIFICATIONS				ORDER NUMBER*	
Nominal Coil VDC	Must Operate VDC	Max. Continuous VDC	Coil Resistance	Form A (DPST)	Form C (DPDT)
3	2.1	6.3	17 ±10%	AZ733–2A–3D	AZ733–2C–3D
5	3.5	10.4	47 ±10%	AZ733–2A–5D	AZ733–2C–5D
6	4.2	12.5	68 ±10%	AZ733–2A–6D	AZ733–2C–6D
9	6.3	19.2	160 ±10%	AZ733–2A–9D	AZ733–2C–9D
12	8.4	25.1	275 ±10%	AZ733–2A–12D	AZ733–2C–12D
18	12.6	38.7	650 ±10%	AZ733–2A–18D	AZ733–2C–18D
24	16.8	50.3	1100 ±15%	AZ733–2A–24D	AZ733–2C–24D
48	33.6	97.9	4170 ±15%	AZ733–2A–48D	AZ733–2C–48D
60	42.0	126.9	7000 ±15%	AZ733–2A–60D	AZ733–2C–60D

*Add suffix "E" for epoxy sealed version.

MECHANICAL DATA

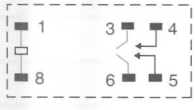
Form A and C



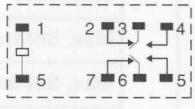
Terminal No.	Dimensions Tol.: ± 0.005 (0.13)
1,2,4,5,7,8	0.018 (0.457) x 0.038 (0.965)
3,6	0.011 (0.279) x 0.038 (0.965)

WIRING DIAGRAM

Form A

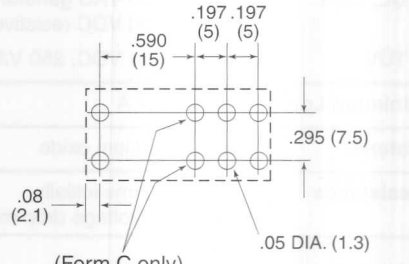


Form C



Viewed toward terminals

PC BOARD LAYOUT



Viewed toward terminals

Dimensions in inches with metric equivalents in parentheses. Tolerance: ± .010"

AZ733W

DPST MINIATURE POWER RELAY

FEATURES

- Dielectric strength 5000 Vrms
- 1.5 mm contact gap
- Epoxy sealed version available
- 10 Amp switching — double pole contacts
- Isolation spacing greater than 8 mm
- UL Class B insulation system
- UL and Canadian file E43203
- TÜV file R9659062

CONTACTS

Arrangement	DPST (2 Form A)
Ratings	Resistive load: Max. switched power: 240 W or 2500 VA Max. switched current: 10 A Max. switched voltage: 150 VDC* or 400 VAC *Note: If switching voltage is greater than 30 VDC, special precautions must be taken. Please contact the factory.
Rated Load **UL, CUR** **TÜV**	 10 A at 250 VAC general use 8 A at 30 VDC resistive 10 A at 30 VDC, 250 VAC
Minimum Load	5 VDC, 0.1 A
Material	Silver cadmium oxide
Resistance	< 50 milliohms initially (24 V, 1 A voltage drop method)

COIL

Power **At Pickup Voltage (typical)** **Max. Continuous Dissipation** **Temperature Rise**	 356 mW 1.5 W at 20°C (68°F) ambient 1.2 W at 40°C (104°F) ambient 51°C (65°F) at nominal coil voltage
Temperature	Max. 130°C (266°F)

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Specifications subject to change without notice.

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 1 x 10^7 1 x 10^5 at rated load
Operate Time (max.)	10 ms at nominal coil voltage
Release Time (max.)	4 ms at nominal coil voltage (with no coil suppression)
Dielectric Strength (at sea level for 1 min.)	5000 Vrms contact to coil 3000 Vrms between open contacts 3000 Vrms between contact sets
Insulation Resistance	1000 megohms min. at 20°C, 500 VDC, 50% RH
Dropout	Greater than 10% of nominal coil voltage
Ambient Temperature **Operating** **Storage**	at nominal coil voltage -40°C (-40°F) to 70°C (158°F) -40°C (-40°F) to 130°C (266°F)
Vibration	0.062" DA at 10–55 Hz
Shock	10 g
Enclosure	P.B.T. polyester
Terminals	Tinned copper alloy, P.C.
Max. Solder Temp.	270°C (518°F)
Max. Solder Time	5 seconds
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 seconds
Weight	18 grams

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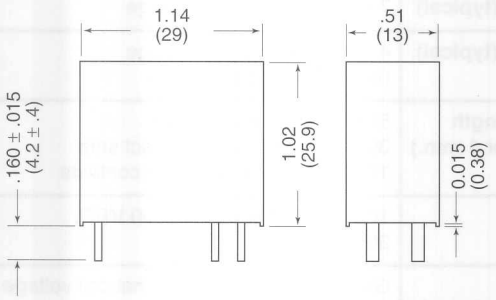
RELAY ORDERING DATA

COIL SPECIFICATIONS				ORDER NUMBER	
Nominal Coil VDC	Must Operate VDC	Max. Continuous VDC	Coil Resistance	Unsealed	Sealed
3	2.25	5.0	11.3 ±10%	AZ733W-2A-3D	AZ733W-2A-3DE
5	3.8	8.4	31 ±10%	AZ733W-2A-5D	AZ733W-2A-5DE
6	4.5	10.1	45 ±10%	AZ733W-2A-6D	AZ733W-2A-6DE
9	6.8	15.5	101 ±10%	AZ733W-2A-9D	AZ733W-2A-9DE
12	9.0	20.3	180 ±10%	AZ733W-2A-12D	AZ733W-2A-12DE
18	13.5	31.2	405 ±10%	AZ733W-2A-18D	AZ733W-2A-18DE
24	18.0	40.6	720 ±15%	AZ733W-2A-24D	AZ733W-2A-24DE
48	36.0	79.1	2,880 ±15%	AZ733W-2A-48D	AZ733W-2A-48DE
60	45.0	102.0	4,500 ±15%	AZ733W-2A-60D	AZ733W-2A-60DE

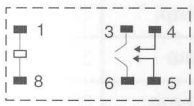
MECHANICAL DATA



Terminal No.	Dimensions Tol.: ± 0.005 (0.13)
1,4,5,8	0.018 (0.457) x 0.038 (0.965)
3,6	0.011 (0.279) x 0.038 (0.965)

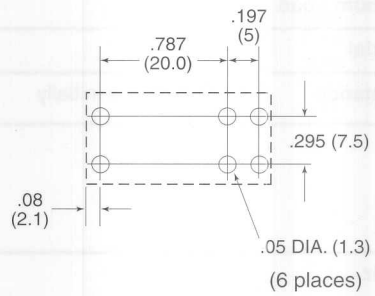
WIRING DIAGRAM

(Bottom View)



PC BOARD LAYOUT

(Bottom View)



Dimensions in inches with metric equivalents in parentheses. Tolerance: ± .010"

AZ742

8 A DPDT MINIATURE POWER RELAY

FEATURES

- Dielectric strength 5000 Vrms
- Low cost
- Epoxy sealed version available
- 8 Amp switching — double pole contacts
- Isolation spacing greater than 10 mm
- Proof tracking index (PTI/CTI) 250
- UL, CSA, VDE and SEV approval

CONTACTS

Arrangement	DPDT (2 Form C)
Ratings	Resistive load: Max. switched power: 240 W or 2 X 2000 VA Max. switched current: 2 X 8 A Max. switched voltage: 150* VDC or 400 VAC *Note: If switching voltage is greater than 30 VDC, special precautions must be taken. Please contact the factory.
Rated Load **UL, CSA** **VDE, SEV**	 8 A at 250 VAC general use 8 A at 30 VDC resistive
Minimum Load	5 VDC, 0.1 A
Material	AgNi
Resistance	< 50 milliohms initially

COIL

Power **At Pickup Voltage (typical)**	 190 mW
Max. Continuous Dissipation	2.1 W at 20°C (68°F) ambient 1.6 W at 40°C (81°F) ambient
Temperature Rise	16°C (29°F) at nominal coil voltage
Max. Temperature	105°C (221°F)

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Specifications subject to change without notice.

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 1 x 10^7 1 x 10^5 (at rated load)
Operate Time (typical)	7 ms at nominal coil voltage
Release Time (typical)	4 ms at nominal coil voltage (with no coil suppression)
Dielectric Strength (at sea level for 1 min.)	5000 Vrms coil to contact 3000 Vrms between contact sets 1000 Vrms between open contacts
Insulation Resistance	1000 megohms min. at 500 VDC, 20°C, 50% RH
Dropout	Greater than 10% of nominal coil voltage
Ambient Temperature **Operating** **Storage**	At nominal coil voltage -40°C (-40°F) to 70°C (158°F) -40°C (-40°F) to 105°C (221°F)
Vibration	0.062" DA at 10–55 Hz
Shock	10 g
Enclosure	P.B.T. polyester
Terminals	Tinned copper alloy, P.C.
Max. Solder Temp.	270°C (518°F)
Max. Solder Time	5 seconds
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 seconds
Weight	16 grams

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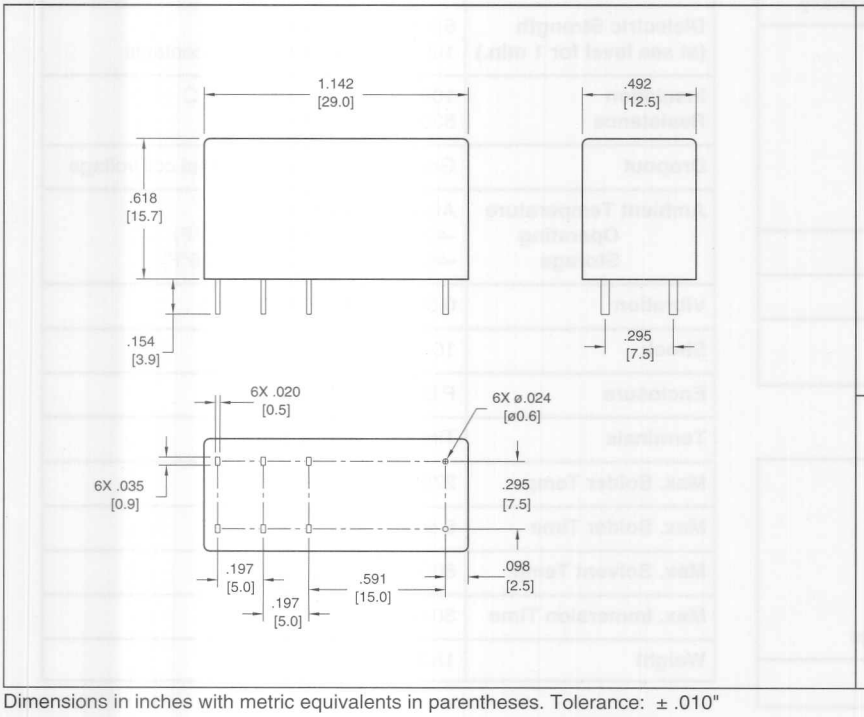
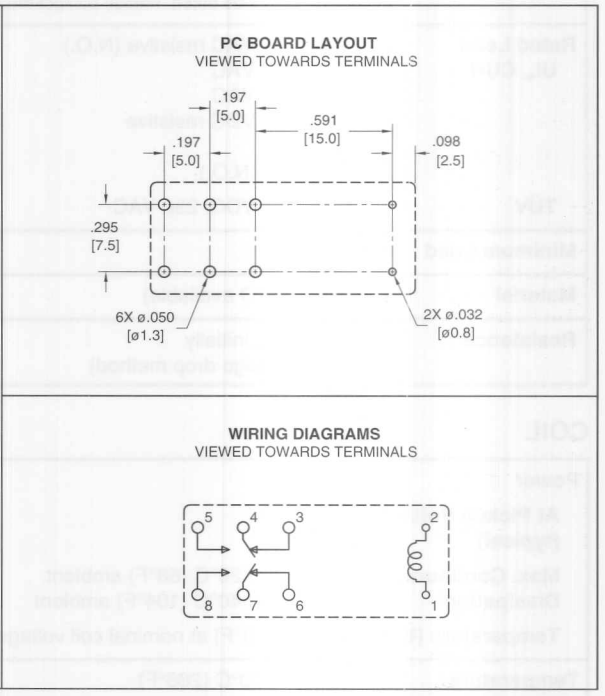
RELAY ORDERING DATA

COIL SPECIFICATIONS - DC COIL				ORDER NUMBER*	
Nominal Coil VDC	Must Operate VDC	Max. Continuous VDC	Coil Resistance ± 10%	Unsealed	Sealed
5	3.5	7.5	63	AZ742–2C–5D	AZ742–2C–5DE
6	4.2	9.0	91	AZ742–2C–6D	AZ742–2C–6DE
12	8.4	18.0	370	AZ742–2C–12D	AZ742–2C–12DE
24	16.8	36.0	1,440	AZ742–2C–24D	AZ742–2C–24DE
48	33.6	72.0	5,600	AZ742–2C–48D	AZ742–2C–48DE
60	42.0	90.0	8,400	AZ742–2C–60D	AZ742–2C–60DE
110	77.0	165.0	25,200	AZ742–2C–110D	AZ742–2C–110DE

MECHANICAL DATA





Dimensions in inches with metric equivalents in parentheses. Tolerance: ± .010"

AZ755

20 AMP MINIATURE POWER RELAY

FEATURES

- Dielectric strength 5000 Vrms
- Low cost
- Epoxy sealed version available
- 20 Amp switching — single pole contacts
- Isolation spacing greater than 8mm
- UL Class B insulation system
- UL and Canadian file E44211
- TÜV file R9659060

CONTACTS

Arrangement	SPST (1 Form A, 1 Form B)) SPDT (1 Form C)
Ratings	Resistive load: Max. switched power: 480 W or 5540 VA Max. switched current: 20 A Max. switched voltage: 150* VDC or 380 VAC *Note: If switching voltage is greater than 30 VDC, special precautions must be taken. Please contact the factory.
Rated Load **UL, CUR**	20 A at 277 VAC resistive (N.O.) 16 A at 240 VAC 12 A at 277 VAC 20 A at 24 VDC resistive 1 HP 240 VAC TV-8 120 VAC (N.O.)
TÜV	16 A at 30 VDC, 250 VAC
Minimum Load	5 VDC, 0.1 A
Material	AgCdO (AgSnO available)
Resistance	< 50 milliohms initially (24 V, 1 A voltage drop method)

COIL

Power	
At Pickup Voltage (typical)	270 mW
Max. Continuous Dissipation	2.3 W at 20°C (68°F) ambient 1.9 W at 40°C (104°F) ambient
Temperature Rise	33°C (60°F) at nominal coil voltage
Temperature	Max. 130°C (266°F)

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 5×10^6 5×10^4 at 16 A 2×10^4 at 20 A
Operate Time (typical)	8 ms at nominal coil voltage
Release Time (typical)	5 ms at nominal coil voltage (with no coil suppression)
Dielectric Strength (at sea level for 1 min.)	5000 Vrms coil to contact 1000 Vrms between open contacts
Insulation Resistance	1000 megohms min. at 20°C 500 VDC 50% RH
Dropout	Greater than 10% of nominal coil voltage
Ambient Temperature **Operating** **Storage**	At nominal coil voltage -40°C (-40°F) to 85°C (185°F) -40°C (-40°F) to 130°C (266°F)
Vibration	0.062" DA at 10–55 Hz
Shock	10 g
Enclosure	P.B.T. polyester
Terminals	Tinned copper alloy, P.C.
Max. Solder Temp.	270°C (518°F)
Max. Solder Time	5 seconds
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 Seconds
Weight	18.5 grams

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Specifications subject to change without notice.

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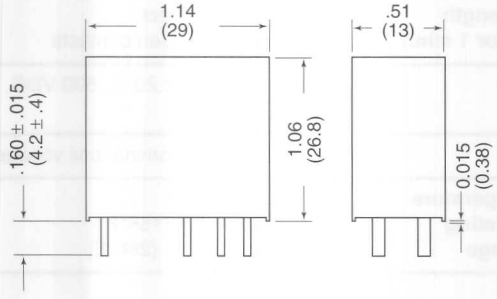
RELAY ORDERING DATA

COIL SPECIFICATIONS				ORDER NUMBER*	
Nominal Coil VDC	Must Operate VDC	Max. Continuous VDC	Coil Resistance	Form A (SPST)	Form C (SPDT)
5	3.6	10.4	47 ±10%	AZ755–1A–5D	AZ755–1C–5D
6	4.3	12.6	69 ±10%	AZ755–1A–6D	AZ755–1C–6D
9	6.5	18.9	155 ±10%	AZ755–1A–9D	AZ755–1C–9D
12	8.6	25.1	275 ±10%	AZ755–1A–12D	AZ755–1C–12D
18	13.0	37.8	620 ±10%	AZ755–1A–18D	AZ755–1C–18D
24	17.3	50.3	1100 ±15%	AZ755–1A–24D	AZ755–1C–24D
48	34.6	100.5	4400 ±15%	AZ755–1A–48D	AZ755–1C–48D
60	43.2	125.8	6880 ±15%	AZ755–1A–60D	AZ755–1C–60D

*Add suffix "E" for epoxy sealed version, suffix "A" for AgSnO (silver tin oxide) contacts. Substitute "1B" in place of "1A" or "1C" to indicate 1 Form B contact arrangement.

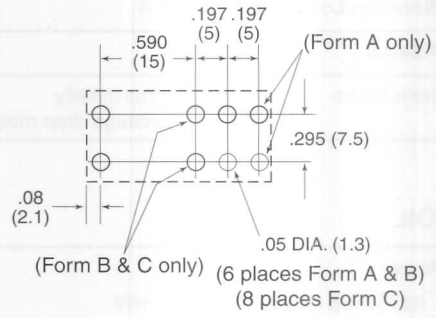
MECHANICAL DATA

Form A and C



Terminal No.	Dimensions Tol.: ± 0.005 (0.13)
1,2,4,5,7,8	0.018 (0.457) x 0.038 (0.965)
3,6	0.011 (0.279) x 0.038 (0.965)

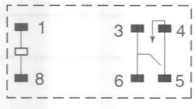
PC BOARD LAYOUT



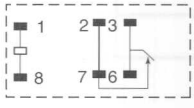
Viewed toward terminals

WIRING DIAGRAM

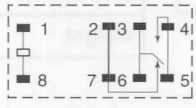
Form A



Form B



Form C



Viewed toward terminals

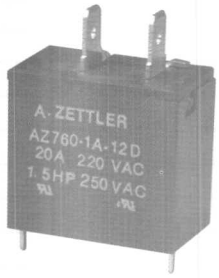
Dimensions in inches with metric equivalents in parentheses. Tolerance: ± .010"

AZ760

20 AMP MINIATURE POWER RELAY

FEATURES

- Low cost
- 20 Amp switching
- 60 Amp inrush current
- Class B insulation system
- Quick connect terminals
- Flux tight construction
- UL and Canadian file E44211



CONTACTS

Arrangement	SPST (1 Form A)
Ratings	Resistive load: Max. switched power: 600 W or 4400 VA Max. switched current: 20 A Max. switched voltage: 150* VDC or 400 VAC *Note: If switching voltage is greater than 30 VDC, special precautions must be taken. Please contact the factory.
Rated Load **UL, CUR**	20 A at 220 VAC (100k operations) 1.5 HP 250 VAC (100k operations)
Minimum Load	5 VDC, 0.1 A
Material	Silver alloy
Resistance	< 50 milliohms initially (24 V, 1 A voltage drop method)

COIL

Power	
At Pickup Voltage (typical)	441 mW
Max. Continuous Dissipation	1.65 W at 20°C (68°F) ambient 1.35 W at 40°C (104°F) ambient
Temperature Rise	60°C (108°F) at nominal coil voltage
Temperature	Max. 130°C (266°F)

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 1 x 10^7 1 x 10^5 at rated load
Operate Time (typical)	15 ms at nominal coil voltage
Release Time (typical)	10 ms at nominal coil voltage (with no coil suppression)
Dielectric Strength **(at sea level for 1 min.)**	2000 Vrms coil to contact 1000 Vrms between open contacts
Insulation Resistance	1000 megohms min. at 20°C, 500 VDC, 50% RH
Dropout	Greater than 10% of nominal coil voltage
Ambient Temperature **Operating** **Storage**	At nominal coil voltage -40°C (-40°F) to 70°C (158°F) -40°C (-40°F) to 130°C (266°F)
Vibration	0.062" DA at 10–55 Hz
Shock **Operating** **Non-Operating**	 20 g, 11 ms, 1/2 sine (no false operation) 100 g, 11 ms, 1/2 sine (no damage)
Enclosure	P.B.T. polyester
Terminals	Tinned copper alloy P.C. & quick connect
Max. Solder Temp.	270°C (518°F)
Max. Solder Time	5 seconds
Weight	40 grams

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Specifications subject to change without notice.

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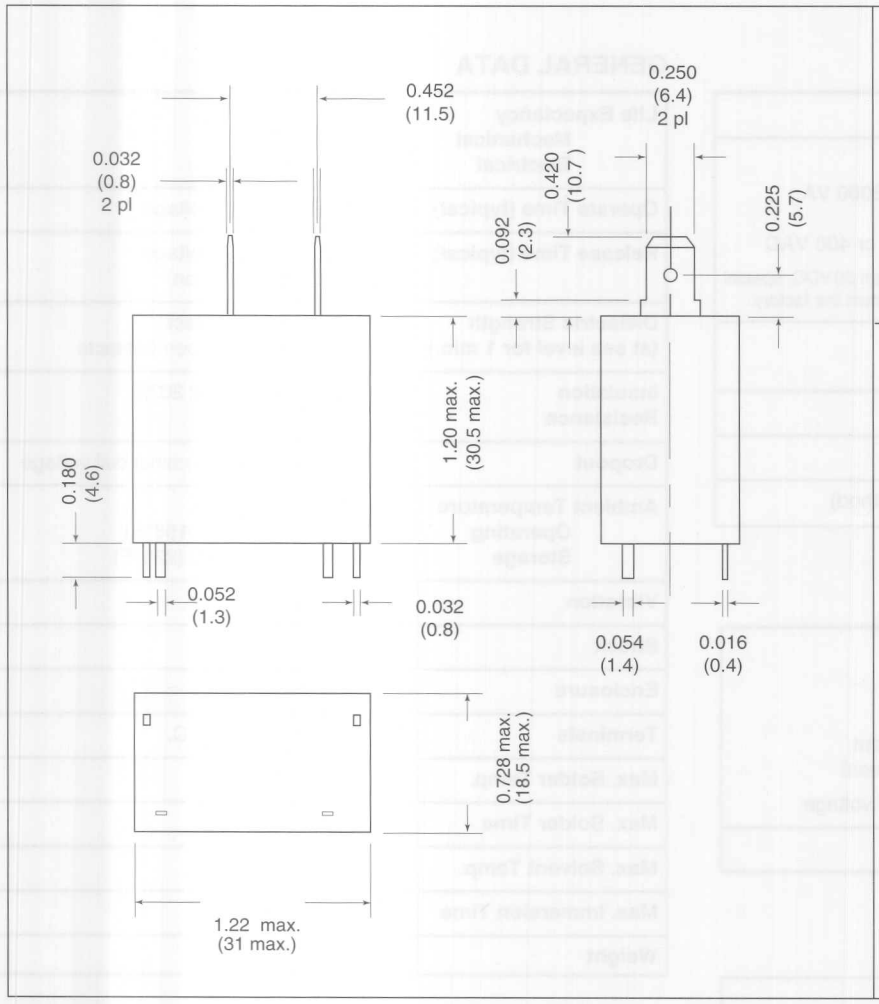
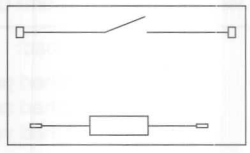
RELAY ORDERING DATA

COIL SPECIFICATIONS				ORDER NUMBER
Nominal Coil VDC	Must Operate VDC	Max. Continuous VDC	Coil Resistance ± 10%	Form A (SPST)
6	4.2	8.0	40	AZ760–1A–6D
12	8.4	16.2	160	AZ760–1A–12D
24	16.8	32.0	640	AZ760–1A–24D
48	33.6	64.0	2560	AZ760–1A–48D

MECHANICAL DATA

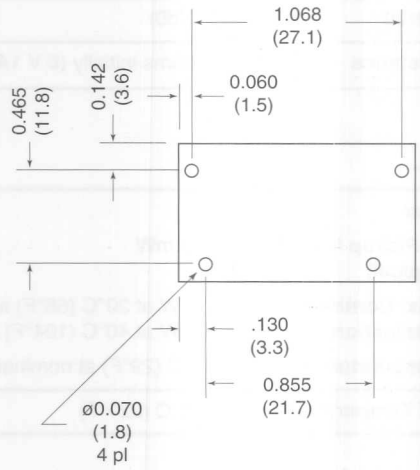


WIRING DIAGRAM



Viewed toward terminals

PC BOARD LAYOUT



Viewed toward terminals

Dimensions in inches with metric equivalents in parentheses. Tolerance: ± .010"

AZ763

12 A SPDT MINIATURE POWER RELAY

FEATURES

- Dielectric strength 5000 Vrms
- Low cost
- Epoxy sealed version available
- 12 Amp switching
- Isolation spacing greater than 10mm
- Proof tracking index (PTI/CTI) 250
- UL, CSA, VDE and SEV pending

CONTACTS

Arrangement	SPDT (1 Form C)
Ratings	Resistive load: Max. switched power: 360 W or 3000 VA Max. switched current: 12 A Max. switched voltage: 150* VDC or 400 VAC *Note: If switching voltage is greater than 30 VDC, special precautions must be taken. Please contact the factory.
Rated Load **UL, CSA, VDE**	12 A at 250 VAC general use 12 A at 30 VDC resistive
Minimum Load	5 VDC, 0.1 A
Material	SCO (AgCd0)
Resistance	< 50 milliohms initially (6 V 1A method)

COIL

Power	
At Pickup Voltage (typical)	190 mW
Max. Continuous Dissipation	2.1 W at 20°C (68°F) ambient 1.6 W at 40°C (104°F) ambient
Temperature Rise	16°C (29°F) at nominal coil voltage
Max. Temperature	105°C (221°F)

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Specifications subject to change without notice.

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 1 x 10^7 1 x 10^5 (at rated load)
Operate Time (typical)	7 ms at nominal coil voltage
Release Time (typical)	4 ms at nominal coil voltage (with no coil suppression)
Dielectric Strength **(at sea level for 1 min.)**	5000 Vrms coil to contact 1000 Vrms between open contacts
Insulation Resistance	1000 megohms min. at 20°C 500 VDC 50% RH
Dropout	Greater than 10% of nominal coil voltage
Ambient Temperature **Operating** **Storage**	At nominal coil voltage -40°C (-40°F) to 70°C (158°F) -40°C (-40°F) to 105°C (221°F)
Vibration	0.062" DA at 10–55 Hz
Shock	10 g
Enclosure	P.B.T. polyester
Terminals	Tinned copper alloy, P.C.
Max. Solder Temp.	270°C (518°F)
Max. Solder Time	5 seconds
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 Seconds
Weight	16 grams

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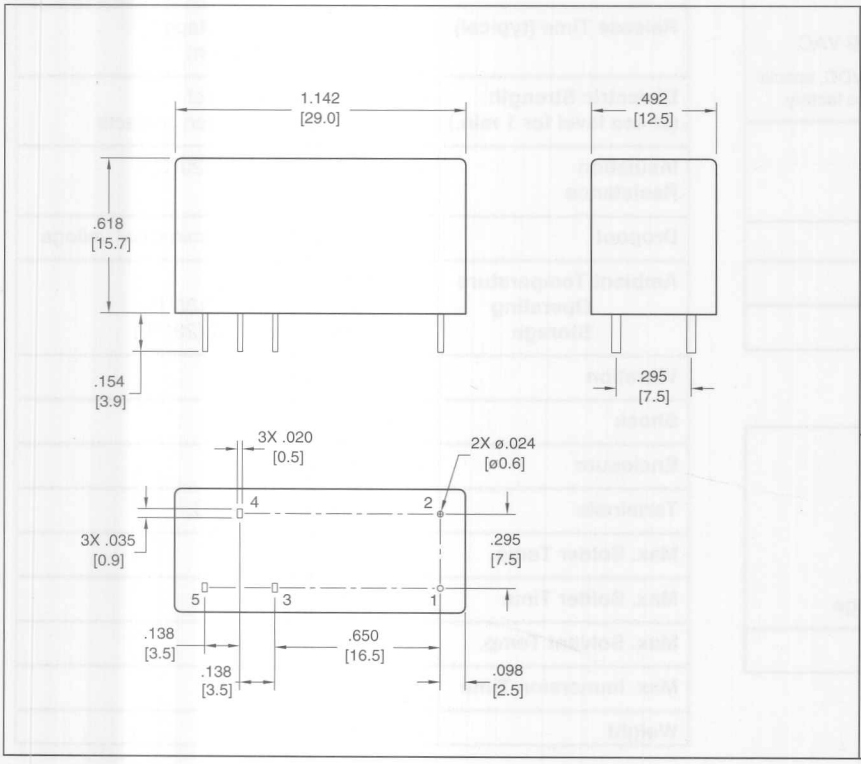
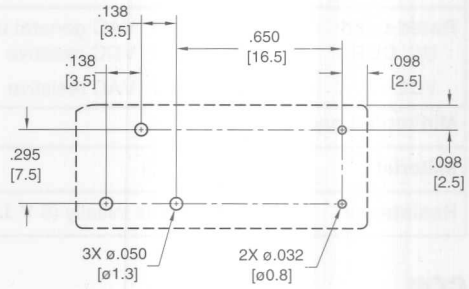
RELAY ORDERING DATA

COIL SPECIFICATIONS				ORDER NUMBER	
Nominal Coil VDC	Must Operate VDC	Max. Continuous VDC	Coil Resistance ± 10%	Unsealed	Sealed
5	3.5	7.5	63	AZ763–1CH–5D	AZ763–1CH–5DE
6	4.2	9.0	91	AZ763–1CH–6D	AZ763–1CH–6DE
12	8.4	18.0	370	AZ763–1CH–12D	AZ763–1CH–12DE
24	16.8	36.0	1,440	AZ763–1CH–24D	AZ763–1CH–24DE
48	33.6	72.0	5,600	AZ763–1CH–48D	AZ763–1CH–48DE
60	42.0	90.0	8,400	AZ763–1CH–60D	AZ763–1CH–60DE
110	77.0	165.0	25,200	AZ763–1CH–110D	AZ763–1CH–110DE

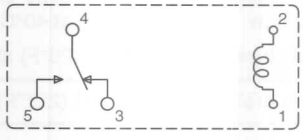
MECHANICAL DATA



PC BOARD LAYOUT
VIEWED TOWARDS TERMINALS



WIRING DIAGRAMS
VIEWED TOWARDS TERMINALS



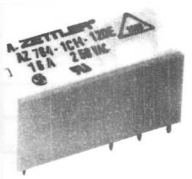
Dimensions in inches with metric equivalents in parentheses. Tolerance: ± .010"

AZ764

16 A SPDT MINIATURE POWER RELAY

FEATURES

- Dielectric strength 5000 Vrms
- Low cost
- Epoxy sealed version available
- 16 Amp switching
- Isolation spacing greater than 10 mm
- Proof tracking index (PTI/CTI) 250
- UL, CUR file E43203
- VDE 112904



CONTACTS

Arrangement	SPDT (1 Form C) SPST (1 Form A)
Ratings	Resistive load: Max. switched power: 480 W or 4000 VA Max. switched current: 16 A Max. switched voltage: 150* VDC or 440 VAC *Note: If switching voltage is greater than 30 VDC, special precautions must be taken. Please contact the factory.
Rated Load **UL, CUR** **VDE**	16 A at 250 VAC general use 16 A at 30 VDC resistive 16 A at 250 VAC resistive
Minimum Load	5 VDC, 0.1 A
Material	SCO (AgCd0)
Resistance	< 50 milliohms initially (6 V 1A method)

COIL

Power	
At Pickup Voltage (typical)	190 mW
Max. Continuous Dissipation	2.6 W at 20°C (68°F) ambient 2.0 W at 40°C (104°F) ambient
Temperature Rise	16°C (29°F) at nominal coil voltage
Max. Temperature	105°C (221°F)

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 1 x 10^7 1 x 10^5 (at rated load)
Operate Time (typical)	7 ms at nominal coil voltage
Release Time (typical)	4 ms at nominal coil voltage (with no coil suppression)
Dielectric Strength (at sea level for 1 min.)	5000 Vrms coil to contact 1000 Vrms between open contacts
Insulation Resistance	1000 megohms min. at 20°C 500 VDC 50% RH
Dropout	Greater than 10% of nominal coil voltage
Ambient Temperature **Operating** **Storage**	At nominal coil voltage -40°C (-40°F) to 85°C (185°F) -40°C (-40°F) to 105°C (221°F)
Vibration	0.062" DA at 10–55 Hz
Shock	10 g
Enclosure	P.B.T. polyester
Terminals	Tinned copper alloy, P.C.
Max. Solder Temp.	270°C (518°F)
Max. Solder Time	5 seconds
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 Seconds
Weight	14 grams

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Specifications subject to change without notice.

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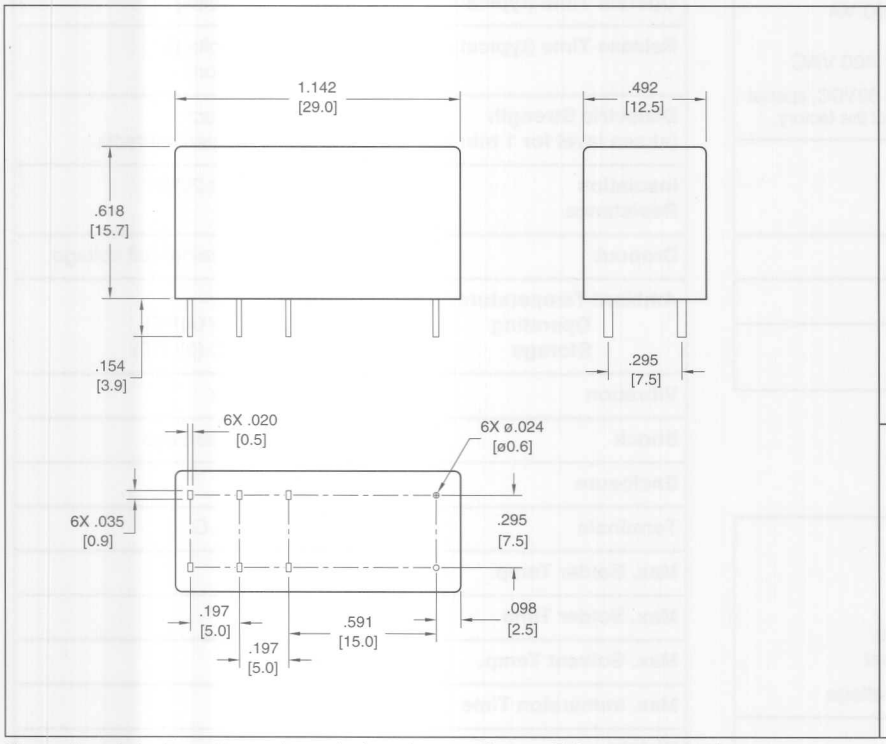
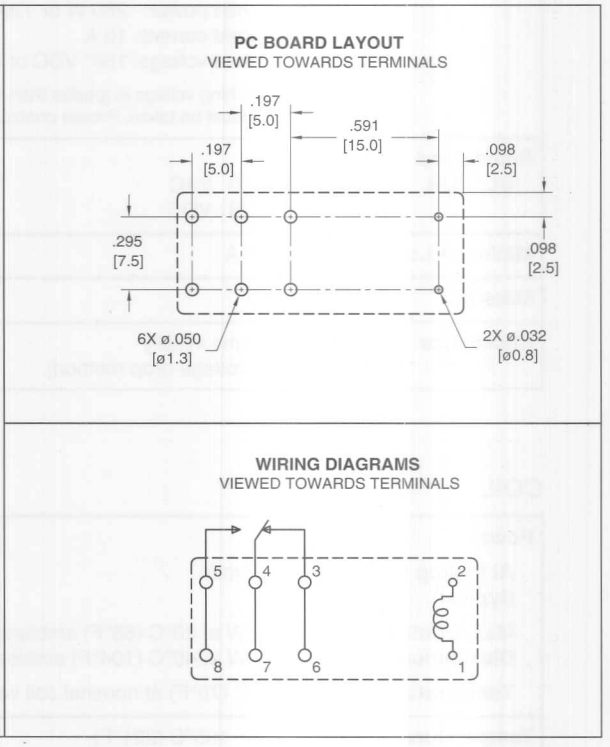
RELAY ORDERING DATA

COIL SPECIFICATIONS				ORDER NUMBER*	
Nominal Coil VDC	Must Operate VDC	Max. Continuous VDC	Coil Resistance ±10%	Unsealed	Sealed
5	3.5	13.0	60	AZ764–1CH–5D	AZ764–1CH–5DE
6	4.2	15.3	90	AZ764–1CH–6D	AZ764–1CH–6DE
9	6.3	23.0	200	AZ764-1CH-9D	AZ764-1CH-9DE
12	8.4	30.6	360	AZ764–1CH–12D	AZ764–1CH–12DE
24	16.8	61.2	1,440	AZ764–1CH–24D	AZ764–1CH–24DE
48	33.6	122.4	5,700	AZ764–1CH–48D	AZ764–1CH–48DE
60	42.0	153.0	7,500	AZ764–1CH–60D	AZ764–1CH–60DE
110	77.0	280.5	25,200	AZ764–1CH–110D	AZ764–1CH–110DE

*Substitute "1AH" in place of "1CH" to indicate 1 Form A.

MECHANICAL DATA





Dimensions in inches with metric equivalents in parentheses. Tolerance: ± .010"

AZ765

SPST SUBMINIATURE POWER RELAY

FEATURES

- Small footprint
- Low cost
- Epoxy sealed version available
- 10 Amp switching
- UL, CUR file E43203

CONTACTS

Arrangement	SPST (1 Form A) SPDT (1 Form C)
Ratings	Resistive load: Max. switched power: 280 W or 1200 VA Max. switched current: 10 A Max. switched voltage: 150* VDC or 400 VAC *Note: If switching voltage is greater than 30 VDC, special precautions must be taken. Please contact the factory.
Rated Load **UL, CUR**	10 A at 120 VAC 10 A at 28 VDC
Minimum Load	5 VDC, 0.1 A
Material	Silver alloy
Resistance	< 50 milliohms initially (24 V, 1 A voltage drop method)

COIL

Power	
At Pickup Voltage (typical)	253 mW
Max. Continuous Dissipation	1.8 W at 20°C (68°F) ambient 1.6 W at 40°C (104°F) ambient
Temperature Rise	39°C (70°F) at nominal coil voltage
Temperature	Max. 105°C (221°F)

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Specifications subject to change without notice.

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 1 x 10^7 1 x 10^5 at rated load
Operate Time (typical)	8 ms at nominal coil voltage
Release Time (typical)	5 ms at nominal coil voltage (with no coil suppression)
Dielectric Strength **(at sea level for 1 min.)**	2500 Vrms coil to contact 1000 Vrms between open contacts
Insulation Resistance	1000 megohms min. at 20°C 500 VDC 50% RH
Dropout	Greater than 5% of nominal coil voltage
Ambient Temperature **Operating** **Storage**	At nominal coil voltage -40°C (-40°F) to 65°C (149°F) -40°C (-40°F) to 105°C (221°F)
Vibration	0.040" DA at 10–50 Hz
Shock	10 g operating, 100 g damage
Enclosure	P.B.T. polyester
Terminals	Tinned copper alloy, P.C.
Max. Solder Temp.	270°C (518°F)
Max. Solder Time	5 seconds
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 seconds
Weight	6 grams

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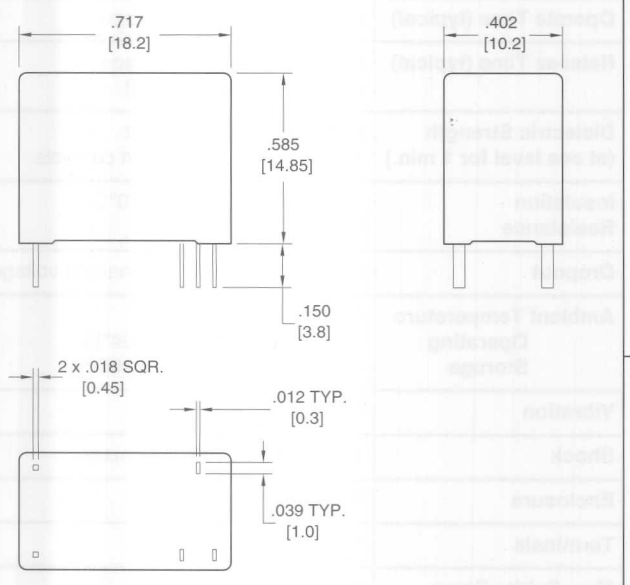
RELAY ORDERING DATA

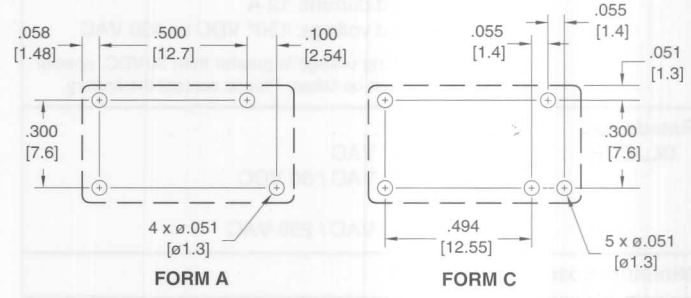
COIL SPECIFICATIONS				ORDER NUMBER*	
Nominal Coil VDC	Must Operate VDC	Max. Continuous VDC	Coil Resistance ± 10%	1 Form A	1 Form C
3	2.25	6.0	20	AZ765–1A–3D	AZ765–1C–3D
5	3.75	9.9	55	AZ765–1A–5D	AZ765–1C–5D
6	4.5	12.0	80	AZ765–1A–6D	AZ765–1C–6D
9	6.75	18.0	180	AZ765–1A–9D	AZ765–1C–9D
12	9.0	24.0	320	AZ765–1A–12D	AZ765–1C–12D
18	13.5	36.0	720	AZ765–1A–18D	AZ765–1C–18D
24	18.0	48.0	1,280	AZ765–1A–24D	AZ765–1C–24D

*Add suffix "E" for epoxy sealed version.

MECHANICAL DATA

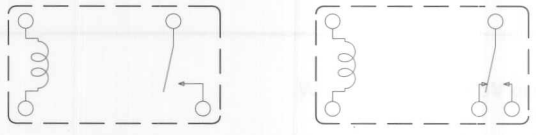


PC BOARD LAYOUT



VIEWED TOWARD TERMINALS

WIRING DIAGRAM



VIEWED TOWARD TERMINALS

Dimensions in inches with metric equivalents in parentheses. Tolerance: ± .010"

AZ766

SPST SUBMINIATURE POWER RELAY

FEATURES

- Small footprint
- Low seated height
- Low cost
- Epoxy sealed version available
- 12 Amp switching
- UL Class B insulation system
- UL, CUR file E44211

CONTACTS

Arrangement	SPST (1 Form A)
Ratings	Resistive load: Max. switched power: 300 W or 2770 VA Max. switched current: 12 A Max. switched voltage: 150* VDC or 400 VAC *Note: If switching voltage is greater than 30 VDC, special precautions must be taken. Please contact the factory.
Rated Load **UL, CUR**	12 A at 125 VAC 10 A at 277 VAC / 30 VDC TV–5 1/4 HP, 125 VAC / 250 VAC
Minimum Load	5 VDC, 0.1 A
Material	Silver tin oxide
Resistance	< 50 milliohms initially (24 V, 1 A voltage drop method)

COIL

Power	
At Pickup Voltage (typical)	253 mW
Max. Continuous Dissipation	1.8 W at 20°C (68°F) ambient 1.6 W at 40°C (104°F) ambient
Temperature Rise	39°C (70°F) at nominal coil voltage
Temperature	Max. 130°C (266°F)

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Specifications subject to change without notice.

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 1×10^7 1×10^5 (at 10 A 125 VAC) 3×10^4 (at 12 A 125 VAC)
Operate Time (typical)	8 ms at nominal coil voltage
Release Time (typical)	5 ms at nominal coil voltage (with no coil suppression)
Dielectric Strength **(at sea level for 1 min.)**	2500 Vrms coil to contact 1000 Vrms between open contacts
Insulation Resistance	1000 megohms min. at 20°C 500 VDC 50% RH
Dropout	Greater than 5% of nominal coil voltage
Ambient Temperature **Operating** **Storage**	At nominal coil voltage -40°C (-40°F) to 90°C (194°F) -40°C (-40°F) to 130°C (266°F)
Vibration	0.040" DA at 10–50 Hz
Shock	10 g operating, 100 g damage
Enclosure	P.B.T. polyester
Terminals	Tinned copper alloy, P.C.
Max. Solder Temp.	270°C (518°F)
Max. Solder Time	5 seconds
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 seconds
Weight	6 grams

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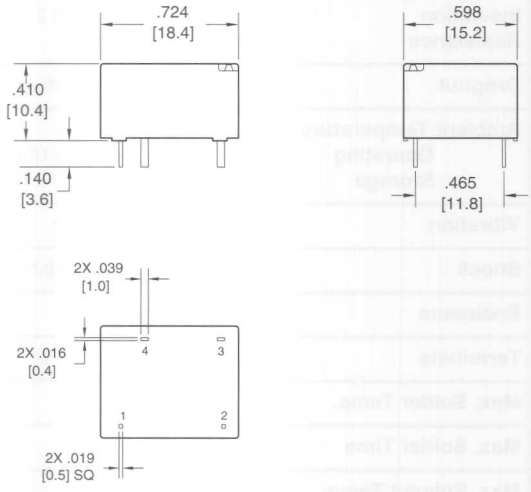
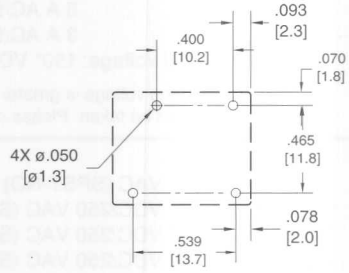
RELAY ORDERING DATA

COIL SPECIFICATIONS				ORDER NUMBER	
Nominal Coil VDC	Must Operate VDC	Max. Continuous VDC	Coil Resistance ± 10%	Unsealed	Sealed
3	2.25	6.0	20	AZ766–1A–3D	AZ766–1A–3DE
5	3.75	9.9	55	AZ766–1A–5D	AZ766–1A–5DE
6	4.5	12.0	80	AZ766–1A–6D	AZ766–1A–6DE
9	6.75	18.0	180	AZ766–1A–9D	AZ766–1A–9DE
12	9.0	24.0	320	AZ766–1A–12D	AZ766–1A–12DE
18	13.5	36.0	720	AZ766–1A–18D	AZ766–1A–18DE
24	18.0	48.0	1,280	AZ766–1A–24D	AZ766–1A–24DE

MECHANICAL DATA

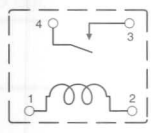


PC BOARD LAYOUT



VIEWED TOWARDS TERMINALS

WIRING DIAGRAMS



VIEWED TOWARDS TERMINALS

Dimensions in inches with metric equivalents in parentheses. Tolerance: ± .010"

AZ767

SPDT SUBMINIATURE POWER RELAY

FEATURES

- Small footprint
- Low cost
- Class B insulation standard
- Epoxy sealed version available
- 10 Amp switching
- UL, CUR file E43203

CONTACTS

Arrangement	SPST (1 Form A) SPDT (1 Form C)
Ratings	Resistive load: Max. switched power: 150 W (SPST-NO) standard 1250 VA (SPST-NO) standard 90 W (SPST-NO) sensitive 750 VA (SPST-NO) sensitive 90 W (SPDT) 750 W (SPDT) Max. switched current: 10 A AC SPST-NO standard 5 A DC SPST-NO standard 3 A AC/DC SPST-NO sensitive 3 A AC/DC SPDT Max. switched voltage: 150* VDC or 380 VAC *Note: If switching voltage is greater than 30 VDC, special precautions must be taken. Please contact the factory.
Rated Load **UL, CUR**	10 A at 125 VAC (SPST-NO) standard 5 A at 30 VDC/250 VAC (SPST-NO) standard 3 A at 30 VDC/250 VAC (SPST-NO) sensitive 3 A at 30 VDC/250 VAC (SPDT)
Minimum Load	5 VDC, 0.1 A
Material	Silver alloy
Resistance	<100 milliohms initially (24 V, 1 A voltage drop method)

COIL

Power	
At Pickup Voltage (typical)	253 mW standard 113 mW sensitive
Max. Continuous Dissipation	1.0 W at 20°C (68°F) ambient
Temperature Rise	39°C (70°F) at nominal coil voltage
Temperature	Max. 130°C (266°F)

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 1 x 10^7 1 x 10^5 (at 10 A 125 VAC)
Operate Time (typical)	8 ms at nominal coil voltage
Release Time (typical)	5 ms at nominal coil voltage (with no coil suppression)
Dielectric Strength **(at sea level for 1 min.)**	2500 Vrms coil to contact 1000 Vrms between open contacts
Insulation Resistance	1000 megohms min. at 20°C 500 VDC 50% RH
Dropout	Greater than 5% of nominal coil voltage
Ambient Temperature **Operating** **Storage**	At nominal coil voltage -40°C (-40°F) to 90°C (194°F) -40°C (-40°F) to 130°C (266°F)
Vibration	0.062" DA at 10–50 Hz
Shock	10 g operating, 100 g damage
Enclosure	P.B.T. polyester
Terminals	Tinned copper alloy, P.C.
Max. Solder Temp.	270°C (518°F)
Max. Solder Time	5 seconds
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 seconds
Weight	6 grams

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Specifications subject to change without notice.

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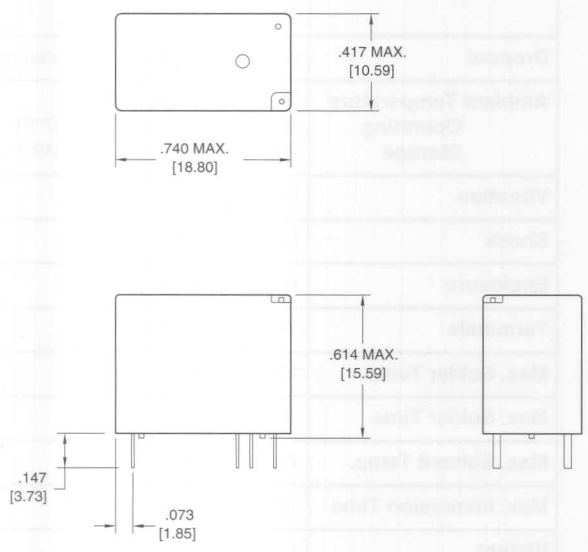
RELAY ORDERING DATA

STANDARD RELAYS					
COIL SPECIFICATIONS				ORDER NUMBER*	
Nominal Coil VDC	Must Operate VDC	Max. Continuous VDC	Coil Resistance ± 10%	Form A (SPST)	Form C (SPDT)
3	2.25	4.5	20	AZ767–1A–3D	AZ767–1C–3D
5	3.75	7.4	55	AZ767–1A–5D	AZ767–1C–5D
6	4.5	8.9	80	AZ767–1A–6D	AZ767–1C–6D
9	6.75	13.4	180	AZ767–1A–9D	AZ767–1C–9D
12	9.0	17.9	320	AZ767–1A–12D	AZ767–1C–12D
18	13.5	26.8	720	AZ767–1A–18D	AZ767–1C–18D
24	18.0	35.8	1,280	AZ767–1A–24D	AZ767–1C–24D

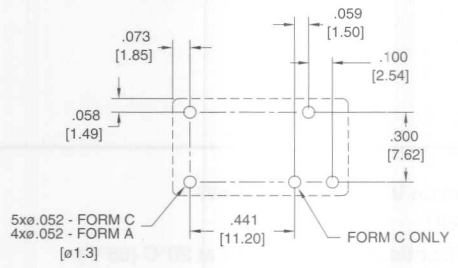
SENSITIVE RELAYS				
COIL SPECIFICATIONS				ORDER NUMBER*
Nominal Coil VDC	Must Operate VDC	Max. Continuous VDC	Coil Resistance ± 10%	Form A (SPST)
3	2.25	6.7	45	AZ767–1A–3DS
5	3.75	11.2	125	AZ767–1A–5DS
6	4.5	13.4	180	AZ767–1A–6DS
9	6.75	20.0	400	AZ767–1A–9DS
12	9.0	26.8	720	AZ767–1A–12DS
18	13.5	40.0	1600	AZ767–1A–18DS
24	18.0	52.9	2800	AZ767–1A–24DS

*Add suffix "E" for epoxy sealed version.

MECHANICAL DATA

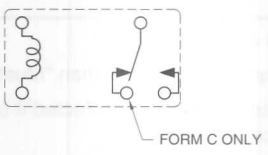


PC BOARD LAYOUT



VIEWED TOWARD TERMINALS

WIRING DIAGRAM

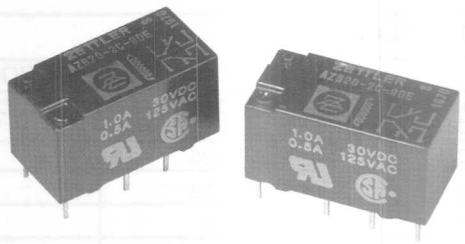


VIEWED TOWARD TERMINALS

Dimensions in inches with metric equivalents in parentheses. Tolerance: ± .010"

AZ820

SUBMINIATURE DIP RELAY



FEATURES

- Low profile for compact board spacing
- DC coils to 48 VDC
- Life expectancy to 10 million operations
- Standard PC 0.1" grid terminal spacing
- Fits standard 16 pin IC socket
- Epoxy sealed for automatic wave soldering and cleaning
- Meets FCC Part 68.302 1500 V lightning surge
- Meets FCC Part 68.304 1000 V dielectric
- UL file E43203, CSA file LR36664

CONTACTS

Arrangement	DPDT (2 Form C) Bifurcated crossbar contacts
Ratings	Resistive load: Max. switched power: 30 W or 60 VA Max. switched current: 2 A Max. switched voltage: 150 VDC or 300 VAC **UL Rating:** 1 A at 30 VDC 0.5 A at 125 VAC
Material	Silver palladium, gold clad
Resistance	< 50 milliohms initially

COIL

Power	
At Pickup Voltage (typical)	250 mW
Max. Continuous Dissipation	1.1 W at 20°C (68°F) .9 W at 40°C (104°F)
Temperature Rise	45°C (81°F) at nominal coil voltage
Temperature	Max. 120°C (248°F)

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Relay adjustment may be affected if undue pressure is exerted on relay case.
4. Specifications subject to change without notice.

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 1×10^7 5×10^5 at 1 A 30 VDC (see table for additional figures)
Operate Time (typical)	5 ms at nominal coil voltage
Release Time (typical)	2 ms at nominal coil voltage (with no coil suppression)
Capacitance	Contact to contact: 1.5 pF Contact set to contact set: 1.5 pF Contact to coil: 2.6 pF
Bounce (typical)	At 10 mA contact current 2 ms at operate N.O. side 3 ms at operate N.C. side
Dielectric Strength (at sea level for 1 min.)	1000 Vrms N.C. contact to coil, energized 1500 Vrms all other points 1000 Vrms across contacts Meets FCC Part 68.302 lightning surge Meets FCC Part 68.304 1000 V dielectric
Insulation Resistance	1000 megohms min. at 20°C, 500 VDC, 50% RH
Dropout	Greater than 10% of nominal coil voltage
Ambient Temperature **Operating** **Storage**	At nominal coil voltage -55°C (-67°F) to 75°C (167°F) -55°C (-67°F) to 120°C (248°F)
Vibration	0.062" DA at 10–55 Hz
Shock	20 g
Enclosure	P.B.T. polyester
Terminals	Tinned copper alloy, P.C.
Max. Solder Temp.	270°C (518°F)
Max. Solder Time	5 seconds
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 seconds
Weight	5 grams

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RELAY ORDERING DATA

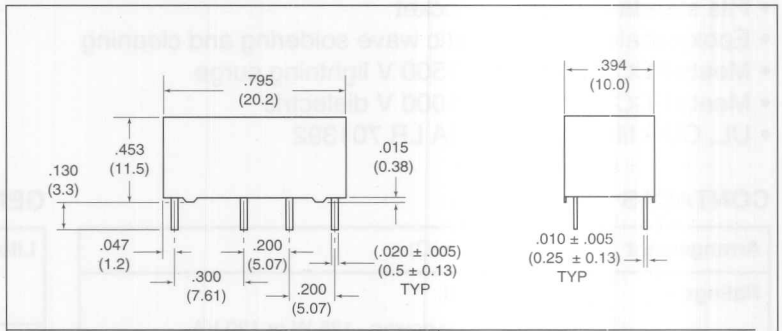
COIL SPECIFICATIONS				ORDER NUMBER
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%	Must Operate VDC	
5	7.5	45	3.5	AZ820–2C–5DE
6	9.0	66	4.2	AZ820–2C–6DE
12	18.0	280	8.4	AZ820–2C–12DE
24	36.0	1,070	16.8	AZ820–2C–24DE
48	72.0	4,000	34.6	AZ820–2C–48DE

TYPICAL CONTACT LIFE EXPECTANCY

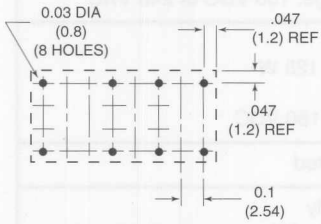
VOLTAGE	CURRENT	NUMBER OF OPERATIONS	
		RESISTIVE LOAD	INDUCTIVE LOAD
50 mV	1 mA	$1x\ 10^7$	1×10^7
30 VDC	1 A	5×10^5	15×10^4
30 VDC	0.7 A	1×10^6	3×10^5
30 VDC	0.3 A	3×10^6	1×10^6
60 VDC	0.5 A	5×10^5	—
60 VDC	0.3 A	1×10^6	—
60 VDC	0.2 A	3×10^6	—
30 VAC	2 A	5×10^5	15×10^4
30 VAC	1.3 A	1×10^6	3×10^5
30 VAC	0.7 A	3×10^6	1×10^6
60 VAC	1 A	5×10^5	15×10^4
60 VAC	0.7 A	1×10^6	3×10^5
60 VAC	0.3 A	3×10^6	1×10^6
125 VAC	0.5 A	5×10^5	15×10^4
125 VAC	0.3 A	1×10^6	3×10^5
125 VAC	0.2 A	3×10^6	1×10^6

NOTES: 1. Relays operated at nominal coil voltage.
2. Inductive load tests are at 0.7 power factor.
3. Table represents typical life figures and are not guaranteed minimums.

MECHANICAL DATA

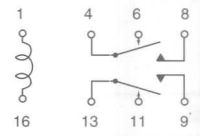


PC BOARD LAYOUT



Viewed toward terminals

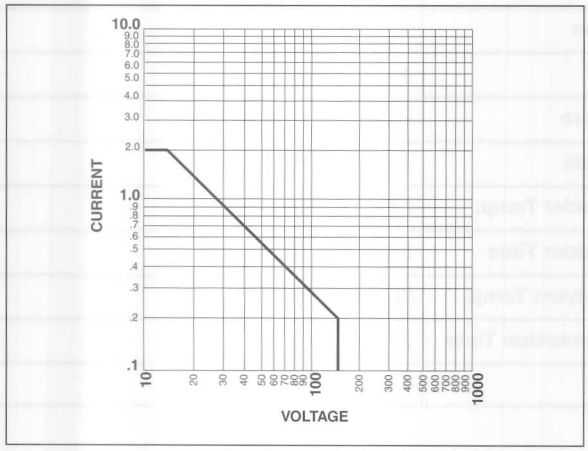
WIRING DIAGRAM



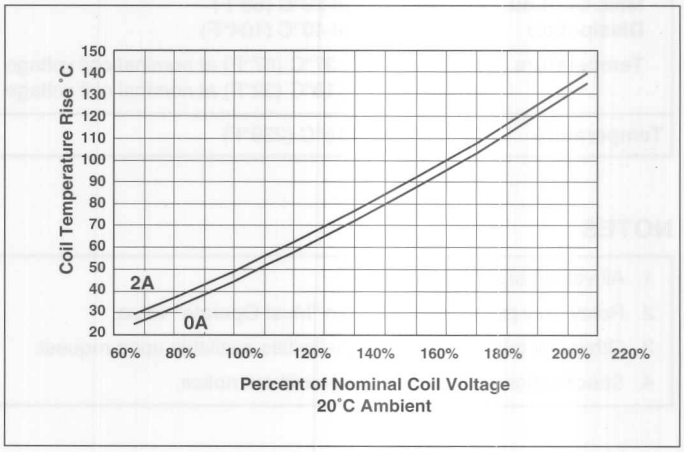
Viewed toward terminals

Dimensions in inches with metric equivalents in parentheses. Tolerance: ± .010"

Maximum Switching Capacity



Coil Temperature Rise

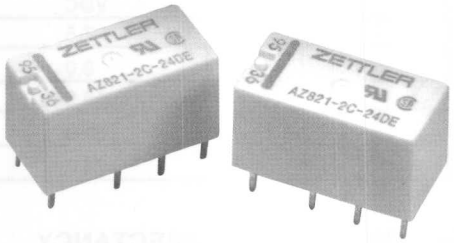


AZ821 / AZ831

SUBMINIATURE DIP RELAY

FEATURES

- Low profile for compact board spacing
- DC coils to 48 VDC
- Single button crossbar contacts
- High sensitivity, 100 mW pickup
- Life expectancy to 15 million operations
- High switching capacity, 125 W, 120 VA
- Fits standard 16 pin IC socket
- Epoxy sealed for automatic wave soldering and cleaning
- Meets FCC Part 68.302 1500 V lightning surge
- Meets FCC Part 68.304 1000 V dielectric
- UL, CUR file E43203 CSA LR 701392



CONTACTS

Arrangement	DPDT (2 Form C)
Ratings	Resistive load: Max. switched power: 125 W or 120 VA Max. switched current: 2 A Max. switched voltage: 150 VDC or 240 VAC
Rated Load **UL** **CSA**	 1.25 A at 100 VDC, 125 W 0.5 A at 125 VAC 1.25 A at 150 VAC, 150 VDC
Material	Silver alloy, gold plated
Resistance	< 50 milliohms initially 200 milliohms at end of life

COIL

Power	
At Pickup Voltage (typical)	AZ821: 250 mW AZ831: 100 mW
Max. Continuous Dissipation	1.7 W at 20°C (68°F) 1.3 W at 40°C (104°F)
Temperature Rise	AZ821: 37°C (67°F) at nominal coil voltage AZ831: 18°C (32°F) at nominal coil voltage
Temperature	Max. 115°C (239°F)

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Other coil resistances and sensitivities available upon request.
4. Specifications subject to change without notice.

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 15 x 10^6 1 x 10^5 at 2 A 30 VDC
Operate Time (typical)	3 ms at nominal coil voltage
Release Time (typical)	2 ms at nominal coil voltage (with no coil suppression)
Dielectric Strength (at sea level for 1 min.)	1500 Vrms coil to contact 1000 Vrms contact to contact
Insulation Resistance	1000 megohms min. at 20°C, 500 VDC, 50% RH
Dropout	Greater than 10% of nominal coil voltage
Capacitance	Contact to contact: 2.0 pF Contact set to contact set: 1.5 pF Contact to coil: 5.0 pF
Ambient Temperature **Operating** **Storage**	At nominal coil voltage AZ821: -40°C (-40°F) to 75°C (167°F) AZ831: -40°C (-40°F) to 95°C (203°F) -40°C (-40°F) to 115°C (239°F)
Vibration	1.5 mm DA at 10–55 Hz
Shock	40 g 11 ms 1/2 sine
Enclosure	P.B.T. polyester 94 V-O
Terminals	Tinned copper alloy
Max. Solder Temp.	270°C (518°F)
Max. Solder Time	5 seconds
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 seconds
Weight	6 grams

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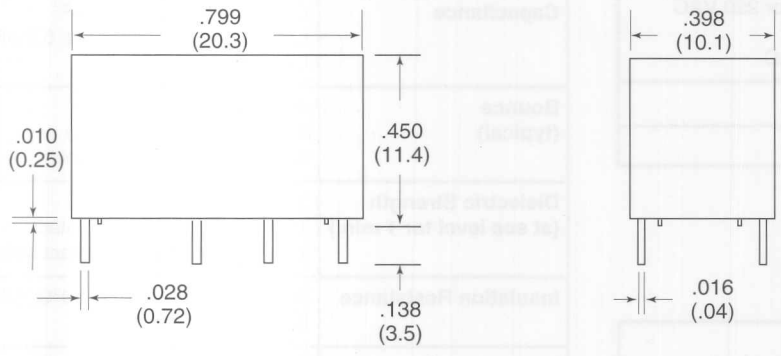
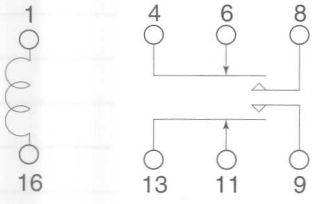
RELAY ORDERING DATA

STANDARD COIL SPECIFICATIONS				ORDER NUMBER
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%	Must Operate VDC	
5	7.8	36	3.5	AZ821–2C–5DE
6	10.9	70	4.2	AZ821–2C–6DE
9	15.4	140	6.3	AZ821–2C–9DE
12	21.8	280	8.4	AZ821–2C–12DE
24	42.2	1050	16.8	AZ821–2C–24DE
48	82.5	4000	33.6	AZ821–2C–48DE
SENSITIVE COIL SPECIFICATIONS				**ORDER NUMBER**
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%	Must Operate VDC	
5	14.6	125	3.5	AZ831–2C–5DSE
6	17.5	180	4.2	AZ831–2C–6DSE
9	26.2	405	6.3	AZ831–2C–9DSE
12	35.0	720	8.4	AZ831–2C–12DSE
24	70.0	2,880	16.8	AZ831–2C–24DSE
48	140.0	11,520	33.6	AZ831–2C–48DSE

MECHANICAL DATA

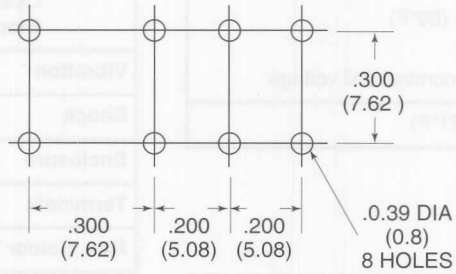


WIRING DIAGRAM



Viewed toward terminals

PC BOARD LAYOUT

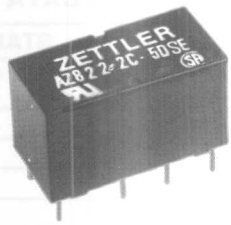


Viewed toward terminals

Dimensions in inches with metric equivalents in parentheses. Tolerance: ± .010"

AZ822

SUBMINIATURE DIP RELAY



FEATURES

- Low profile for compact board spacing
- DC coils to 48 VDC
- Life expectancy to 10 million operations
- Standard PC 0.1" grid terminal spacing
- Fits standard 16 pin IC socket
- Epoxy sealed for automatic wave soldering and cleaning
- Meets FCC Part 68.302 1500 V lightning surge
- Meets FCC Part 68.304 1000 V dielectric
- UL file E43203, CSA file LR 702137

CONTACTS

Arrangement	DPDT (2 Form C) Bifurcated crossbar contacts
Ratings	Resistive load: Max. switched power: 60 W or 125 VA Max. switched current: 2 A Max. switched voltage: 220 VDC or 250 VAC **UL/CSA Rating:** 1 A at 24 VDC 0.5 A at 120 VAC
Material	Silver palladium, gold clad
Resistance	< 50 milliohms initially

COIL

Power	
At Pickup Voltage (typical)	74 mW 3 - 12 V coils 98 mW 15 - 24 V coils 147 mW 48 V coils
Max. Continuous Dissipation	0.94 W at 20°C (68°F)
Temperature Rise	15°C (27°F) at nominal coil voltage
Temperature	Max. 105°C (221°F)

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Relay adjustment may be affected if undue pressure is exerted on relay case.
4. Specifications subject to change without notice.

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 1×10^8 5×10^5 at 1 A 30 VDC (see table for additional figures)
Operate Time (typical)	5 ms at nominal coil voltage
Release Time (typical)	2 ms at nominal coil voltage (with no coil suppression)
Capacitance	Contact to contact: 0.7 pF Contact set to contact set: 0.9 pF Contact to coil: 1.0 pF
Bounce (typical)	At 10 mA contact current 2 ms at operate N.O. side 3 ms at operate N.C. side
Dielectric Strength (at sea level for 1 min.)	1000 Vrms contact to coil 1000 Vrms contact to contact 1000 Vrms between contact sets
Insulation Resistance	1000 megohms min. at 20°C, 500 VDC, 50% RH
Dropout	Greater than 5% of nominal coil voltage
Ambient Temperature **Operating** **Storage**	At nominal coil voltage -55°C (-67°F) to 90°C (194°F) -55°C (-67°F) to 105°C (221°F)
Vibration	0.062" DA at 10–55 Hz
Shock	20 g
Enclosure	P.B.T. polyester
Terminals	Tinned copper alloy, P.C.
Max. Solder Temp.	270°C (518°F)
Max. Solder Time	5 seconds
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 seconds
Weight	4.5 grams

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RELAY ORDERING DATA

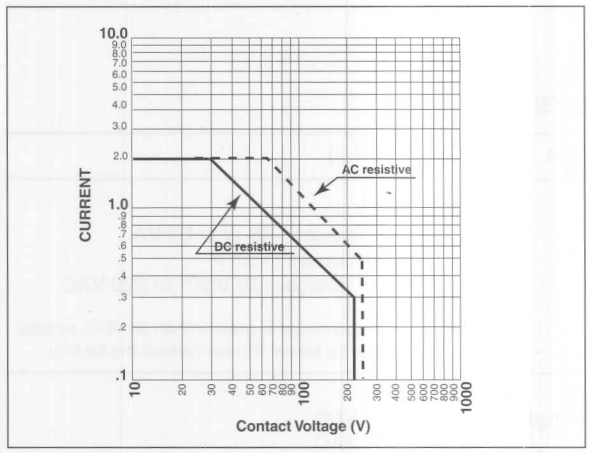
COIL SPECIFICATIONS				ORDER NUMBER
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%	Must Operate VDC	
3	7.5	60	2.1	AZ822-2C-3DSE
5	12.5	167	3.5	AZ822-2C-5DSE
6	15.0	240	4.2	AZ822-2C-6DSE
9	22.5	540	6.3	AZ822-2C-9DSE
12	30.0	960	8.4	AZ822-2C-12DSE
18	40.0	1620	12.6	AZ822-2C-18DSE
24	52.9	2880	16.8	AZ822-2C-24DSE
48	84.9	7680	33.6	AZ822-2C-48DSE

TYPICAL CONTACT LIFE EXPECTANCY

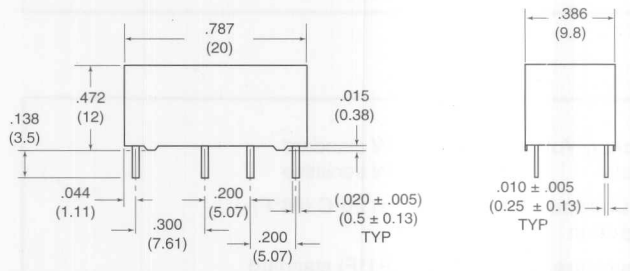
VOLTAGE	CURRENT	NUMBER OF OPERATIONS	
		RESISTIVE LOAD	INDUCTIVE LOAD
50 mV	1 mA	$1x\ 10^7$	1×10^7
30 VDC	1 A	5×10^5	15×10^4
30 VDC	0.7 A	1×10^6	3×10^5
30 VDC	0.3 A	3×10^6	1×10^6
60 VDC	0.5 A	5×10^5	—
60 VDC	0.3 A	1×10^6	—
60 VDC	0.2 A	3×10^6	—
30 VAC	2 A	5×10^5	15×10^4
30 VAC	1.3 A	1×10^6	3×10^5
30 VAC	0.7 A	3×10^6	1×10^6
60 VAC	1 A	5×10^5	15×10^4
60 VAC	0.7 A	1×10^6	3×10^5
60 VAC	0.3 A	3×10^6	1×10^6
125 VAC	0.5 A	5×10^5	15×10^4
125 VAC	0.3 A	1×10^6	3×10^5
125 VAC	0.2 A	3×10^6	1×10^6

NOTES: 1. Relays operated at nominal coil voltage.
2. Inductive load tests are at 0.7 power factor.
3. Table represents typical life figures and are not guaranteed minimums.

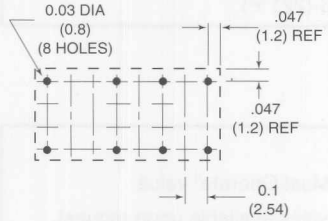
Maximum Switching Capacity



MECHANICAL DATA

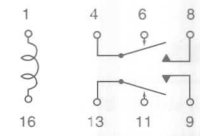


PC BOARD LAYOUT



Viewed toward terminals

WIRING DIAGRAM



Viewed toward terminals

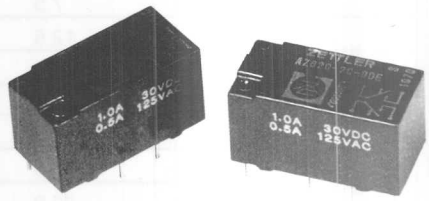
Dimensions in inches with metric equivalents in parentheses. Tolerance: ± .010"

AZ826

SUBMINIATURE DIP RELAY

FEATURES

- Low profile for compact board spacing
- DC coils to 24 VDC
- Bifurcated crossbar contacts
- High sensitivity, 100 mW pickup
- Life expectancy to 10 million operations
- High switching capacity, 48 W, 60 VA
- Fits standard 16 pin IC socket
- Epoxy sealed for automatic wave soldering and cleaning
- UL, CUR pending



CONTACTS

Arrangement	DPDT (2 Form C)
Ratings	Resistive load: Max. switched power: 48 W or 60 VA Max. switched current: 1.25 A Max. switched voltage: 150 VDC* or 220 VAC *Note: If switching voltage is greater than 30 VDC, special precautions must be taken. Please contact the factory.
Rated Load **UL (pending)**	2.0 A at 24 VDC 0.5 A at 125 VAC
Material	AgPd, gold plated
Resistance	< 50 milliohms initially 200 milliohms at end of life

COIL

Power	
At Pickup Voltage (typical)	220 mW standard 100 mW sensitive
Max. Continuous Dissipation	0.5 W at 20°C (68°F)
Temperature Rise	45°C (81°F) standard 27°C (49°F) sensitive
Temperature	Max. 105°C (221°F)

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Other coil resistances and sensitivities available upon request.
4. Specifications subject to change without notice.

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 1 x 10^7 1 x 10^5 at rated load
Operate Time (typical)	6 ms at nominal coil voltage
Release Time (typical)	5 ms at nominal coil voltage (with no coil suppression)
Dielectric Strength **(at sea level for 1 min.)**	1000 Vrms coil to contact 500 Vrms contact to contact
Insulation Resistance	1000 megohms min. at 20°C, 500 VDC, 50% RH
Dropout	Greater than 10% of nominal coil voltage
Ambient Temperature **Operating** **Storage**	At nominal coil voltage -40°C (-40°F) to 70°C (158°F) standard -40°C (-40°F) to 80°C (176°F) sensitive -40°C (-40°F) to 105°C (221°F)
Vibration	1.5 mm DA at 10–55 Hz
Shock	50 g 11 ms 1/2 sine
Enclosure	P.B.T. polyester
Terminals	Tinned copper alloy
Max. Solder Temp.	270°C (518°F)
Max. Solder Time	5 seconds
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 seconds
Weight	5 grams

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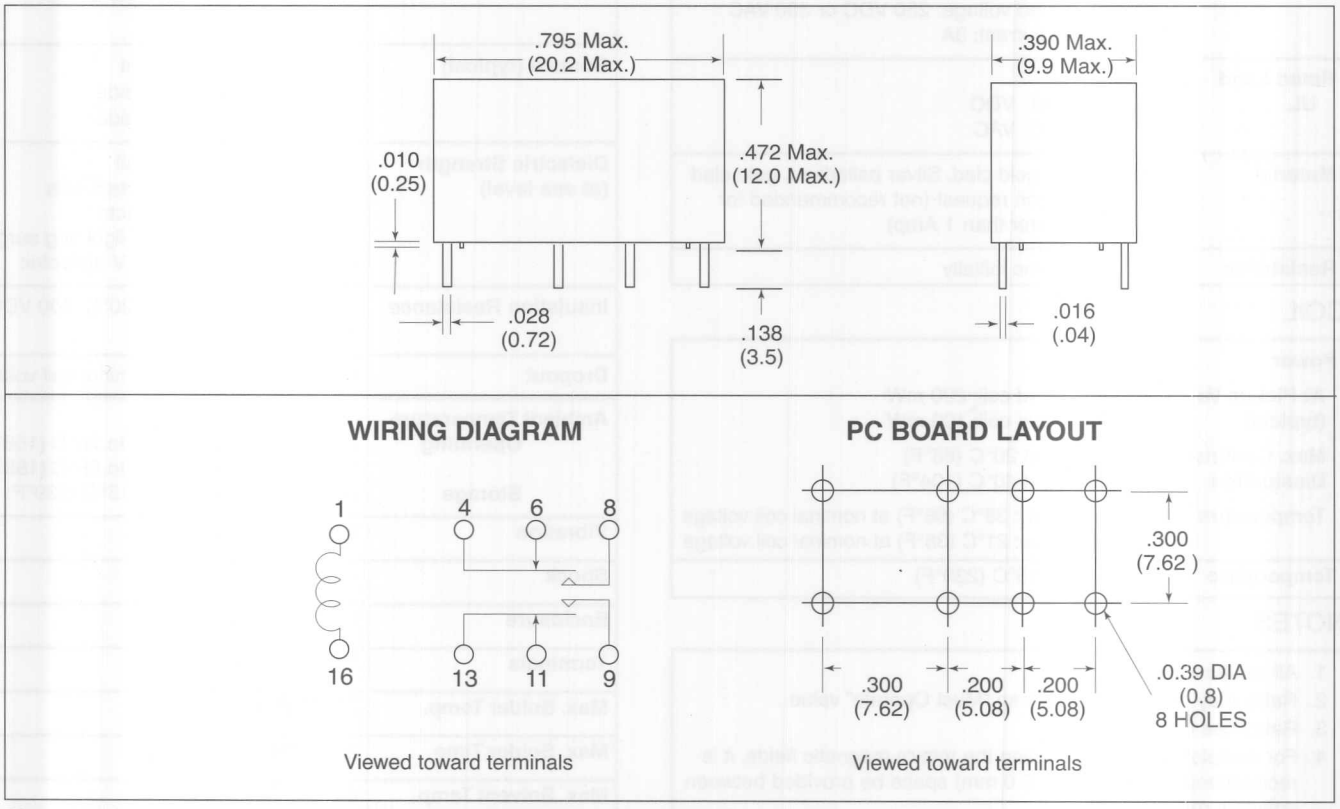
RELAY ORDERING DATA

STANDARD COIL SPECIFICATIONS				ORDER NUMBER
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%	Must Operate VDC	
4.5	5.8	45	3.15	AZ826-2C-4.5DE
5	6.5	56	3.5	AZ826–2C–5DE
6	7.8	80	4.2	AZ826–2C–6DE
12	15.6	320	8.4	AZ826–2C–12DE
24	31.2	1280	16.8	AZ826–2C–24DE
SENSITIVE COIL SPECIFICATIONS				**ORDER NUMBER**
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%	Must Operate VDC	
4.5	5.8	101	3.15	AZ826-2C-4.5DSE
5	6.5	125	3.5	AZ826–2C–5DSE
6	7.8	180	4.2	AZ826–2C–6DSE
12	15.6	720	8.4	AZ826–2C–12DS
24	31.2	2880	16.8	AZ826–2C–24DSE

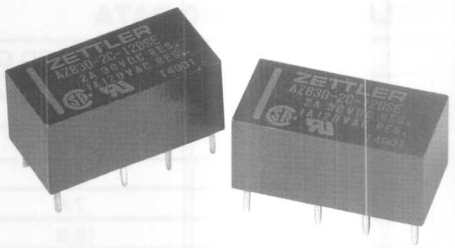
MECHANICAL DATA



Dimensions in inches with metric equivalents in parentheses. Tolerance: ± .010"

AZ830

POLARIZED DIP RELAY
SINGLE SIDE STABLE



FEATURES

- Low profile for compact board spacing
- DC coils to 48 VDC
- High sensitivity, 100 mW pickup
- Life expectancy to 100 million operations
- High switching capacity, 60 W, 125 VA
- Fits standard 16 pin IC socket
- Epoxy sealed for automatic wave soldering and cleaning
- Meets FCC Part 68.302 1500 V lightning surge
- Meets FCC Part 68.304 1000 V dielectric
- UL file E43203; CSA file LR 36664

CONTACTS

Arrangement	DPDT (2 Form C) Bifurcated crossbar contacts
Ratings	Resistive load: Max. switched power: 60 W or 125 VA Max. switched current: 2 A Max. switched voltage: 250 VDC or 300 VAC Max. carry current: 3A
Rated Load **UL**	2 A at 30 VDC 1 A at 120 VAC
Material	Silver alloy, gold clad. Silver palladium, gold clad available upon request (not recommended for current greater than 1 Amp).
Resistance	< 50 milliohms initially

COIL

Power	
At Pickup Voltage (typical)	Standard coil: 200 mW Sensitive coil: 100 mW
Max. Continuous Dissipation	1.0 W at 20°C (68°F) 0.9 W at 40°C (104°F)
Temperature Rise	Standard: 38°C (68°F) at nominal coil voltage Sensitive: 21°C (38°F) at nominal coil voltage
Temperature	Max. 115°C (239°F)

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Relay has fixed coil polarity.
4. For complete isolation between the relay's magnetic fields, it is recommended that a .197" (5.0 mm) space be provided between adjacent relays.
5. Relay adjustment may be affected if undue pressure is exerted on relay case.
6. Specifications subject to change without notice.

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 1 x 10^8 1 x 10^5 at 2 A, 30 VDC or 1 A, 125 VAC 2 x 10^6 at 1 A, 30 VDC or .5 A, 125 VAC (see table for additional figures)
Operate Time (typical)	3 ms at nominal coil voltage
Release Time (typical)	2 ms at nominal coil voltage (with no coil suppression)
Capacitance	Contact to contact: 1.0 pF Contact set to contact: 1.0 pF Contact to coil: 2.0 pF
Bounce (typical)	At 10 mA contact current 1.5 ms at operate N.O. side 2.5 ms at operate N.C. side
Dielectric Strength (at sea level)	1500 Vrms contact to coil 1000 Vrms between contact sets 1000 Vrms across contacts Meets FCC Part 68.302 lightning surge Meets FCC Part 68.304 V dielectric
Insulation Resistance	1000 megohms min. at 20°C, 500 VDC, 50% RH
Dropout	Greater than 10% of nominal coil voltage
Ambient Temperature **Operating** **Storage**	At nominal coil voltage Standard: -40°C (-40°F) to 70°C (158°F) Sensitive: -40°C (-40°F) to 85°C (185°F) Both: -40°C (-40°F) to 115°C (239°F)
Vibration	0.062" DA at 10–55 Hz
Shock	40 g
Enclosure	P.B.T. polyester
Terminals	Tinned copper alloy, P.C.
Max. Solder Temp.	270°C (518°F)
Max. Solder Time	5 seconds
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 seconds
Weight	5 grams

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RELAY ORDERING DATA

A. STANDARD COIL				
COIL SPECIFICATIONS				ORDER NUMBER
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%	Must Operate VDC	
5	7.5	62.5	3.5	AZ830–2C–5DE
6	9.0	90	4.2	AZ830–2C–6DE
12	18.0	360	8.4	AZ830–2C–12DE
24	36.0	1440	16.8	AZ830–2C–24DE
48	72.0	5760	33.6	AZ830–2C–48DE
SENSITIVE RELAYS				
5	11.0	125	3.5	AZ830–2C–5DSE
6	13.0	180	4.2	AZ830–2C–6DSE
12	26.0	720	8.4	AZ830–2C–12DSE
24	53.0	2880	16.8	AZ830–2C–24DSE
48	106.0	11520	33.6	AZ830–2C–48DSE

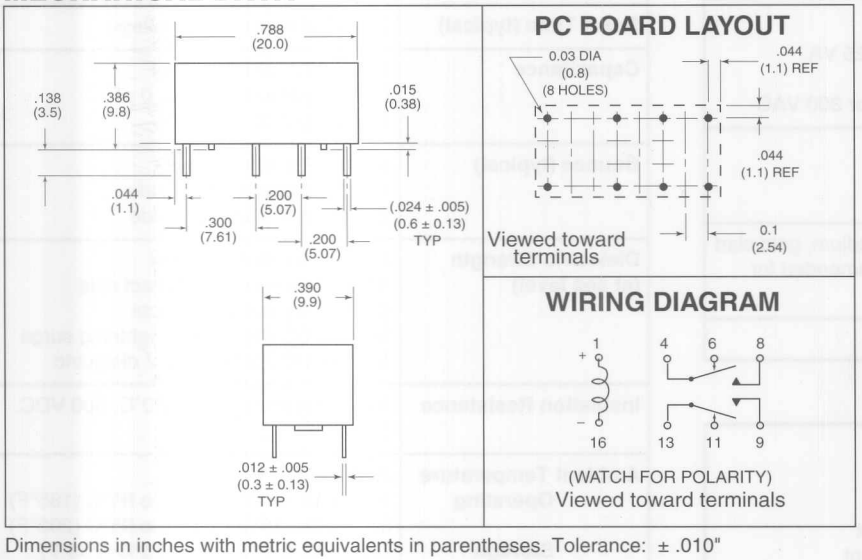
* Add suffix "R" to indicate reversed polarity.

TYPICAL CONTACT LIFE EXPECTANCY

VOLTAGE	POWER	NUMBER OF OPERATIONS	
		RESISTIVE LOAD	INDUCTIVE LOAD
50 mV	50 µW	$5x\ 10^7$	5×10^7
30 VDC	60 W	5×10^5	15×10^4
30 VDC	40 W	1×10^6	3×10^5
30 VDC	20 W	3×10^6	1×10^6
60 VDC	60 W	5×10^5	—
60 VDC	40 W	1×10^6	—
60 VDC	20 W	3×10^6	—
30 VAC	120 VA	5×10^5	15×10^4
30 VAC	80 VA	1×10^6	3×10^5
30 VAC	40 VA	3×10^6	1×10^6
60 VAC	120 VA	5×10^5	15×10^4
60 VAC	80 VA	1×10^6	3×10^5
60 VAC	40 VA	3×10^6	1×10^6
125 VAC	125 VA	5×10^5	15×10^4
125 VAC	80 VA	1×10^6	3×10^5
125 VAC	40 VA	3×10^6	1×10^6

NOTES: 1. Relays operated at nominal coil voltage.
2. Inductive load tests are at 0.7 power factor.
3. Table represents typical life figures and are not guaranteed minimums.

MECHANICAL DATA



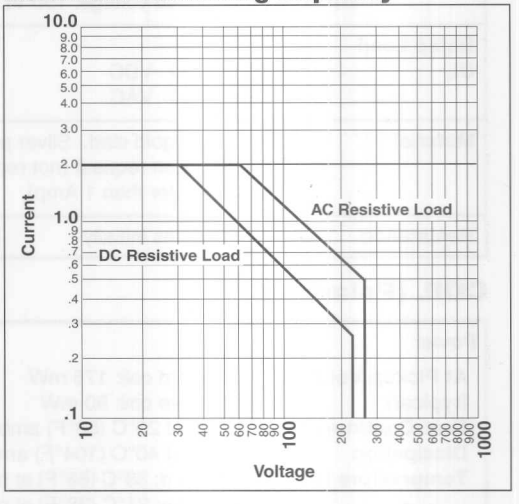
PC BOARD LAYOUT

WIRING DIAGRAM

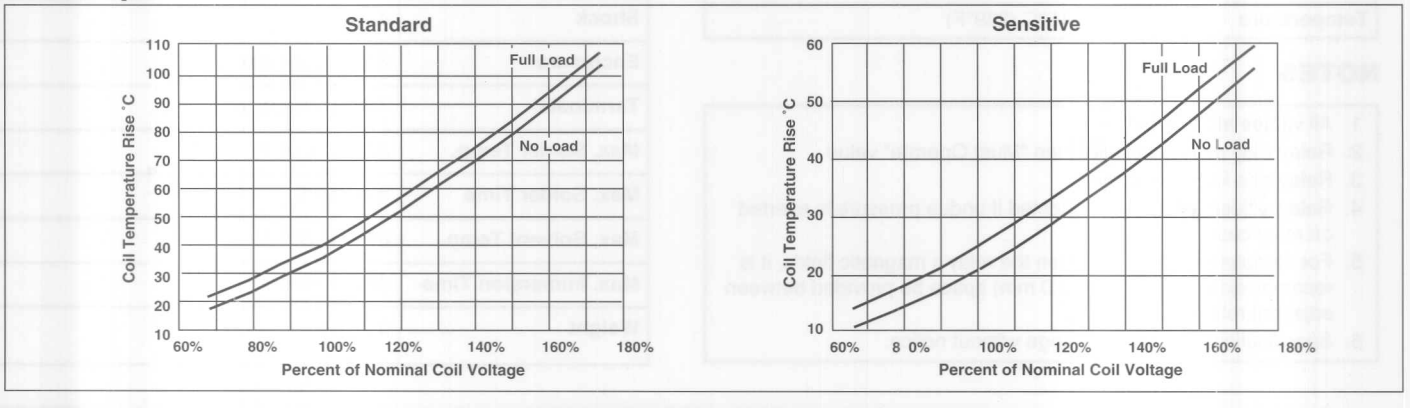
(WATCH FOR POLARITY)
Viewed toward terminals

Dimensions in inches with metric equivalents in parentheses. Tolerance: ± .010"

Maximum Switching Capacity

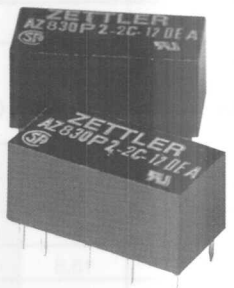


Coil Temperature Rise



AZ830P

POLARIZED DIP RELAY BISTABLE (LATCHING)



FEATURES

- High sensitivity, 90 mW pickup
- Low profile DIP package
- Meets FCC Part 68.302 1500 V lightning surge
- Meets FCC Part 68.304 1000 V dielectric
- Epoxy sealed for automatic wave soldering and cleaning
- DC coils to 48 VDC
- High switching capacity, 60 W, 125 VA
- Fits standard 16 pin IC socket
- UL file E43203; CSA file LR 36664

CONTACTS

Arrangement	DPDT (2 Form C) Bifurcated crossbar contacts
Ratings	Resistive load: Max. switched power: 60 W or 125 VA Max. switched current: 2 A Max. switched voltage: 150 VDC or 300 VAC
Rated Load **UL**	2 A at 30 VDC 1 A at 120 VAC
Material	Silver alloy, gold clad. Silver palladium, gold clad available upon request (not recommended for current greater than 1 Amp).
Resistance	< 50 milliohms initially

COIL (Polarized)

Power	
At Pickup Voltage (typical)	Standard coil: 176 mW Sensitive coil: 90 mW
Max. Continuous Dissipation	1.2 W at 20°C (68°F) ambient 0.9 W at 40°C (104°F) ambient
Temperature Rise	Standard: 38°C (68°F) at nominal coil voltage Sensitive: 21°C (38°F) at nominal coil voltage
Temperature	Max. 115°C (239°F)

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Relay has fixed coil polarity.
4. Relay adjustment may be affected if undue pressure is exerted on relay case.
5. For complete isolation between the relay's magnetic fields, it is recommended that a .197" (5.0 mm) space be provided between adjacent relays.
6. Specifications subject to change without notice.

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 1 x 10^8 1 x 10^5 at 2 A, 30 VDC or 1 A, 125 VAC 2 x 10^6 at 1 A, 30 VDC or .5 A, 125 VAC
Set Time (typical)	3 ms at nominal coil voltage
Reset Time (typical)	3.5 ms at nominal coil voltage
Capacitance	Contact to contact: 1.0 pF Contact set to contact: 1.0 pF Contact to coil: 2.0 pF
Bounce (typical)	At 10 mA contact current 1.5 ms at operate N.O. side 2.5 ms at operate N.C. side
Dielectric Strength (at sea level)	1500 Vrms contact to coil 1000 Vrms between contact sets 1000 Vrms across contacts Meets FCC Part 68.302 lightning surge Meets FCC Part 68.304 V dielectric
Insulation Resistance	1000 megohms min. at 20°C, 500 VDC, 50% RH
Ambient Temperature **Operating** **Storage**	At nominal coil voltage Standard: -40°C (-40°F) to 85°C (185°F) Sensitive: -40°C (-40°F) to 95°C (203°F) Both: -40°C (-40°F) to 115°C (239°F)
Vibration	0.062" DA at 10–55 Hz
Shock	40 g
Enclosure	P.B.T. polyester
Terminals	Tinned copper alloy, P.C.
Max. Solder Temp.	270°C (518°F)
Max. Solder Time	5 seconds
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 seconds
Weight	5 grams

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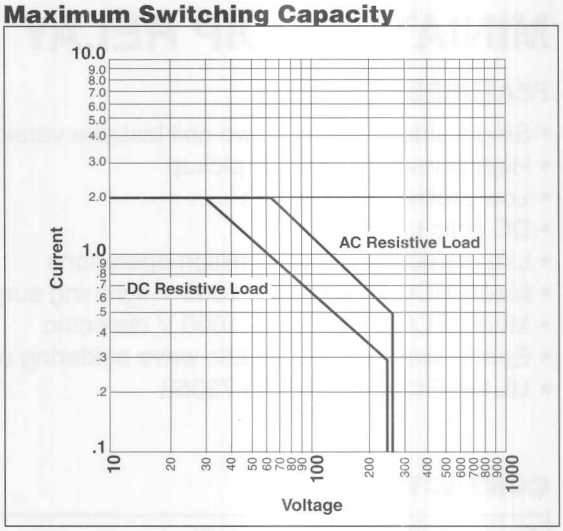
RELAY ORDERING DATA

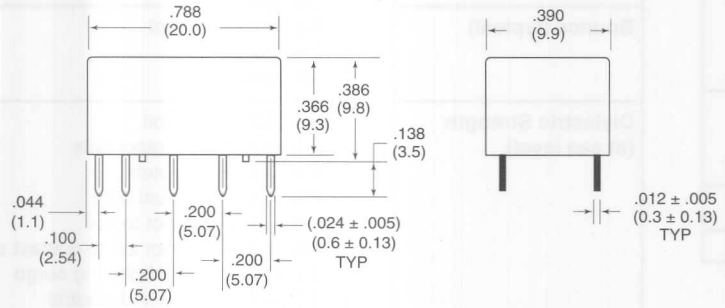
STANDARD RELAYS				
COIL SPECIFICATIONS				
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%	Set Reset VDC	ORDER NUMBER*
5	7.5	69.4	3.5	AZ830P2–2C–5DE
6	9.0	100	4.2	AZ830P2–2C–6DE
9	13.5	225	6.3	AZ830P2–2C–9DE
12	18.0	400	8.4	AZ830P2–2C–12DE
24	36.0	1,600	16.8	AZ830P2–2C–24DE
48	72.0	6,400	33.6	AZ830P2–2C–48DE
SENSITIVE RELAYS				
5	11.0	139	3.5	AZ830P2–2C–5DSE
6	13.0	200	4.2	AZ830P2–2C–6DSE
9	19.5	450	6.3	AZ830P2–2C–9DSE
12	26.0	800	8.4	AZ830P2–2C–12DSE
24	53.0	3,200	16.8	AZ830P2–2C–24DSE
48	106.0	12,800	33.6	AZ830P2–2C–48DSE

* Add suffix "A" for silver palladium gold clad contacts.

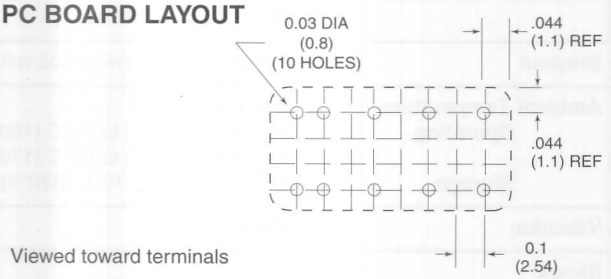
Maximum Switching Capacity



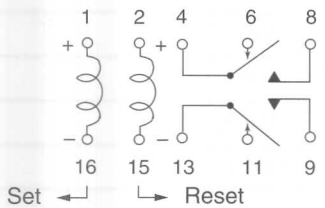
MECHANICAL DATA



PC BOARD LAYOUT



TWO COIL LATCHING
WATCH FOR POLARITY

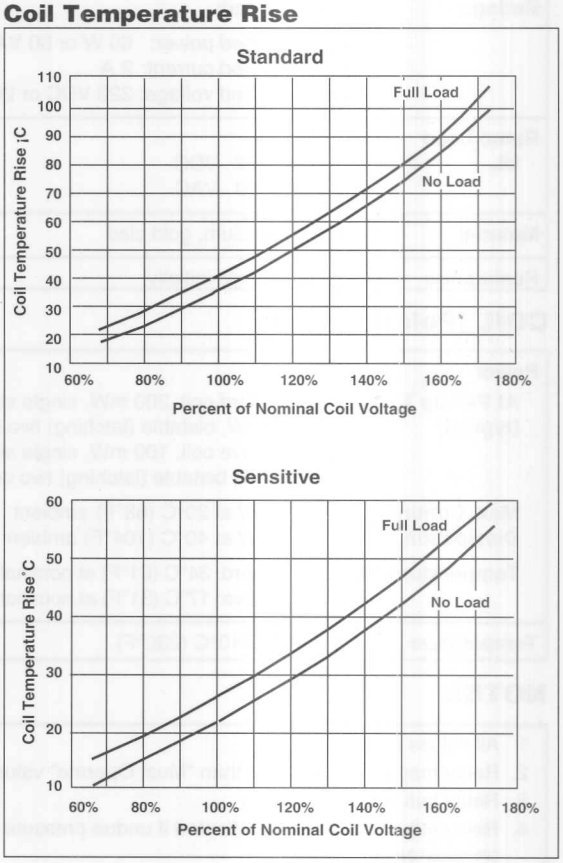


WIRING DIAGRAM

Diagrams show the "reset" position before energized with polarity as shown

Viewed toward terminals

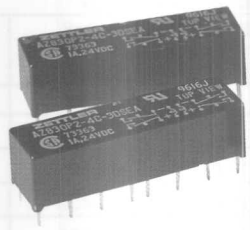
Coil Temperature Rise



Dimensions in inches with metric equivalents in parentheses. Tolerance: ± .010"

AZ830 4 Pole

4 POLE POLARIZED MINIATURE DIP RELAY



FEATURES

- Single side stable and two coil bistable versions
- High sensitivity, 90 mW pickup
- Low profile DIP package
- DC coils to 48 VDC
- Life expectancy to 100 million operations
- Meets FCC Part 68.302 1500 V lightning surge
- Meets FCC Part 68.304 1000 V dielectric
- Epoxy sealed for automatic wave soldering and cleaning
- UL file E43203; CSA file 73363

CONTACTS

Arrangement	4PDT (4 Form C) Bifurcated crossbar contacts
Ratings	Resistive load: Max. switched power: 60 W or 60 VA Max. switched current: 2 A Max. switched voltage: 220 VDC or 250 VAC
Rated Load **UL**	1 A at 30 VDC 0.5 A at 120 VAC
Material	Silver palladium, gold clad
Resistance	< 50 milliohms initially

COIL (Polarized)

Power	
At Pickup Voltage (typical)	Standard coil: 200 mW, single side stable 180 mW, bistable (latching) two coil Sensitive coil: 100 mW, single side stable 90 mW, bistable (latching) two coil
Max. Continuous Dissipation	1.27 W at 20°C (68°F) ambient 0.99 W at 40°C (104°F) ambient
Temperature Rise	Standard: 34°C (61°F) at nominal coil voltage Sensitive: 17°C (31°F) at nominal coil voltage
Temperature	Max. 110°C (230°F)

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Relay has fixed coil polarity.
4. Relay adjustment may be affected if undue pressure is exerted on relay case.
5. For complete isolation between the relay's magnetic fields, it is recommended that a .197" (5.0 mm) space be provided between adjacent relays.
6. Specifications subject to change without notice.

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 1 x 10^8 5 x 10^5 at 2 A, 30 VDC 2 x 10^5 at 0.5 A, 120 VAC
Operate Time (typical)	3 ms at nominal coil voltage
Release Time (typical)	2 ms at nominal coil voltage (with no coil suppression)
Capacitance	Contact to contact: 1.0 pF Contact set to contact: 1.7 pF Contact to coil: 2.0 pF
Bounce (typical)	At 10 mA contact current 0.3 ms at operate 0.3 ms at release
Dielectric Strength (at sea level)	1500 Vrms contact to coil 1500 Vrms between contact sets 1000 Vrms across contacts 250 Vrms coil to coil (dual coil) 1500 Vrms surge contact to coil 1500 Vrms surge contact set to contact set Meets FCC Part 68.302 lightning surge Meets FCC Part 68.304 V dielectric
Insulation Resistance	1000 megohms min. at 20°C, 500 VDC, 50% RH
Dropout	Greater than 10% of nominal coil voltage
Ambient Temperature **Operating** **Storage**	At nominal coil voltage Standard: -40°C (-40°F) to 70°C (158°F) Sensitive: -40°C (-40°F) to 80°C (176°F) Both: -40°C (-40°F) to 110°C (230°F)
Vibration	0.062" DA at 10–55 Hz
Shock	30 g
Enclosure	P.B.T. polyester
Terminals	Tinned copper alloy, P.C.
Max. Solder Temp.	260°C (500°F)
Max. Solder Time	5 seconds
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 seconds
Weight	6.5 grams

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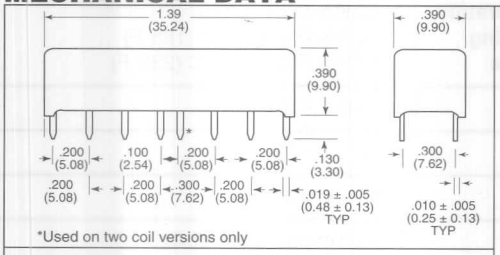
AZ830 4 Pole

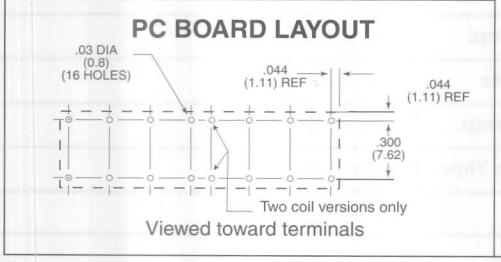
RELAY ORDERING DATA

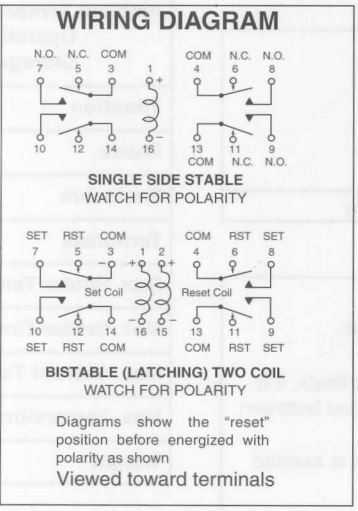
STANDARD RELAYS: Single Side Stable				
COIL SPECIFICATIONS				ORDER NUMBER
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%	Must Operate VDC	
5	9	62.5	3.5	AZ830–4C–5DEA
6	10	90	4.2	AZ830–4C–6DEA
9	16	203	6.3	AZ830–4C–9DEA
12	21	360	8.4	AZ830–4C–12DEA
24	43	1440	16.8	AZ830–4C–24DEA
48	86	5760	33.6	AZ830–4C–48DEA
SENSITIVE RELAYS: Single Side Stable				
5	12	125	3.5	AZ830–4C–5DSEA
6	15	180	4.2	AZ830–4C–6DSEA
9	23	405	6.3	AZ830–4C–9DSEA
12	30	720	8.4	AZ830–4C–12DSEA
24	60	2880	16.8	AZ830–4C–24DSEA
48	120	11520	33.6	AZ830–4C–48DSEA

STANDARD RELAYS: Bistable (Latching) Two Coil					
	COIL SPECIFICATIONS				ORDER NUMBER
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%		Must Operate VDC	
		Coil I	Coil II		
5	9	69	69	3.5	AZ830P2–4C–5DEA
6	10	100	100	4.2	AZ830P2–4C–6DEA
12	21	400	400	8.4	AZ830P2–4C–12DEA
24	43	1,600	1,600	16.8	AZ830P2–4C–24DEA
48	86	6,400	6,400	33.6	AZ830P2–4C–48DEA
SENSITIVE RELAYS: BISTABLE (Latching) Two Coil					
5	10	139	139	3.5	AZ830P2–4C–5DSEA
6	13	200	200	4.2	AZ830P2–4C–6DSEA
12	26	800	800	8.4	AZ830P2–4C–12DSEA
24	52	3,200	3,200	16.8	AZ830P2–4C–24DSEA
48	104	12,800	12,800	33.6	AZ830P2–4C–48DSEA

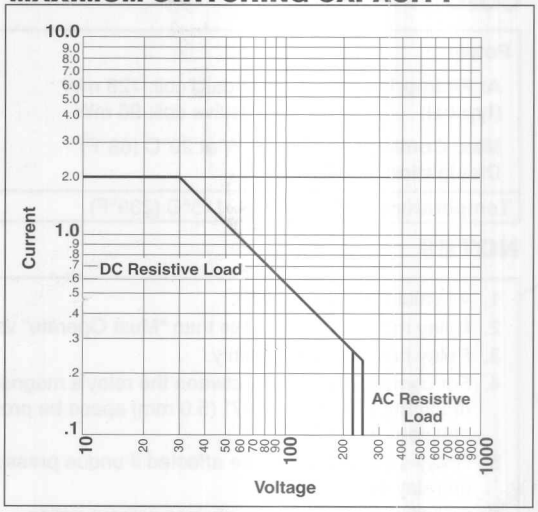
MECHANICAL DATA







MAXIMUM SWITCHING CAPACITY



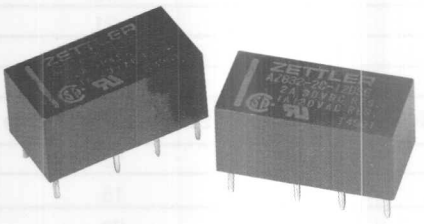
Dimensions in inches with metric equivalents in parentheses. Tolerance: ± .010"

AZ832

POLARIZED DIP RELAY
SINGLE SIDE STABLE

FEATURES

- Low profile for compact board spacing
- DC coils to 48 VDC
- High sensitivity, 96 mW pickup
- Life expectancy to 20 million operations
- High switching capacity, 150 W, 250 VA
- Fits standard 16 pin IC socket
- Epoxy sealed for automatic wave soldering and cleaning
- Meets FCC Part 68.302 1500 V lightning surge
- Meets FCC Part 68.304 1000 V dielectric
- UL file E43203; CSA file LR702225



CONTACTS

Arrangement	DPDT (2 Form C) Bifurcated crossbar contacts
Ratings	Resistive load: Max. switched power: 150 W or 250 VA Max. switched current: 5 A Max. switched voltage: 150 VDC or 220 VAC *Note: If switching voltage is greater than 30 VDC, special precautions must be taken. Please contact the factory.
Rated Load UL/CSA	2 A at 25 VDC resistive 1 A at 120 VAC resistive
Material	Gold plated silver against palladium silver. Gold plated palladium silver against palladium silver available upon request
Resistance	< 50 milliohms initially

COIL

Power	
At Pickup Voltage (typical)	Standard coil: 128 mW Sensitive coil: 96 mW
Max. Continuous Dissipation	0.9 W at 20°C (68°F)
Temperature	Max. 115°C (239°F)

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Relay has fixed coil polarity.
4. For complete isolation between the relay's magnetic fields, it is recommended that a .197" (5.0 mm) space be provided between adjacent relays.
5. Relay adjustment may be affected if undue pressure is exerted on relay case.
6. Specifications subject to change without notice.

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 2 x 10^7 1 x 10^5 at 2 A, 30 VDC or 1 A, 125 VAC 2 x 10^6 at 1 A, 30 VDC or .5 A, 125 VAC
Operate Time (typical)	3 ms at nominal coil voltage
Release Time (typical)	2 ms at nominal coil voltage (with no coil suppression)
Bounce (typical)	3 ms
Dielectric Strength (at sea level)	1500 Vrms contact to coil 1000 Vrms between contact sets 1000 Vrms across contacts Meets FCC Part 68.302 lightning surge Meets FCC Part 68.304 V dielectric
Insulation Resistance	1000 megohms min. at 20°C, 500 VDC, 50% RH
Dropout	Greater than 10% of nominal coil voltage
Ambient Temperature **Operating** **Storage**	At nominal coil voltage -40°C (-40°F) to 85°C (185°F) -40°C (-40°F) to 115°C (239°F)
Vibration	50 g at 10–500 Hz
Shock	50 g
Enclosure	P.B.T. polyester
Terminals	Tinned copper alloy, P.C.
Max. Solder Temp.	270°C (518°F)
Max. Solder Time	5 seconds
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 seconds
Weight	5 grams

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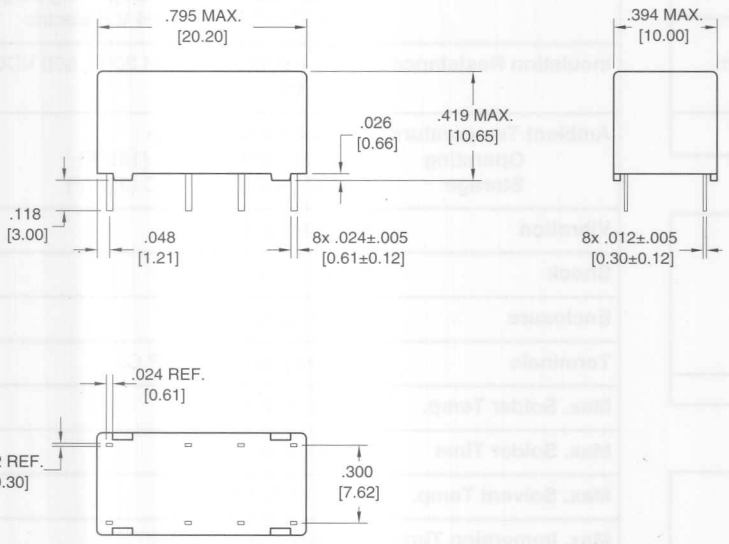
RELAY ORDERING DATA

STANDARD COIL				
COIL SPECIFICATIONS				ORDER NUMBER
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%	Must Operate VDC	
3	6.4	45.0	2.4	AZ832-2C-3DE
5	10.6	125	4.0	AZ832–2C–5DE
12	25.5	720	9.6	AZ832–2C–12DE
24	50.9	2,880	19.2	AZ832–2C–24DE
48	101.8	11,520	38.4	AZ832–2C–48DE

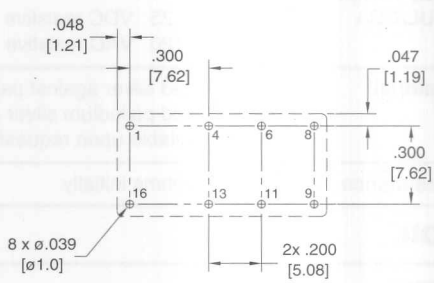
SENSITIVE COIL				
COIL SPECIFICATIONS				ORDER NUMBER
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%	Must Operate VDC	
5	12.3	167	4.0	AZ832–2C–5DSE
12	29	960	9.6	AZ832–2C–12DSE
24	57	3,540	119.2	AZ832–2C–24DSE

MECHANICAL DATA

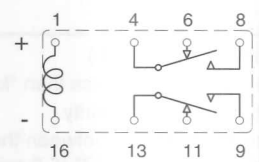
MECHANICAL DATA



PC BOARD LAYOUT



WIRING DIAGRAM



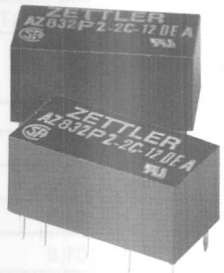
(WATCH FOR POLARITY)

VIEWED TOWARD TERMINALS

Dimensions in inches with metric equivalents in parentheses. Tolerance: ± .010"

AZ832P

POLARIZED DIP RELAY
BISTABLE (LATCHING)



FEATURES

- High sensitivity, 42 mW pickup
- Low profile DIP package
- Meets FCC Part 68.302 1500 V lightning surge
- Meets FCC Part 68.304 1000 V dielectric
- Single and dual coil versions
- DC coils to 24 VDC
- High switching capacity, 150 W, 250 VA
- Fits standard 16 pin IC socket
- Epoxy sealed for automatic wave soldering and cleaning
- UL file E43203; CSA file LR702225

CONTACTS

Arrangement	DPDT (2 Form C) Bifurcated crossbar contacts
Ratings	Resistive load: Max. switched power: 150 W or 250 VA Max. switched current: 5 A Max. switched voltage: 150 VDC or 220 VAC *Note: If switching voltage is greater than 30 VDC, special precautions must be taken. Please contact the factory.
Rated Load **UL/CSA**	2 A at 25 VDC resistive 1 A at 120 VAC resistive
Material	Gold plated silver against palladium silver. Gold plated palladium silver against palladium silver available upon request
Resistance	< 50 milliohms initially

COIL

Power	
At Pickup Voltage (typical)	Standard coil: 128 mW Sensitive coil: 96 mW
Max. Continuous Dissipation	0.9 W at 20°C (68°F)
Temperature	Max. 115°C (239°F)

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Relay has fixed coil polarity.
4. For complete isolation between the relay's magnetic fields, it is recommended that a .197" (5.0 mm) space be provided between adjacent relays.
5. Relay adjustment may be affected if undue pressure is exerted on relay case.
6. Specifications subject to change without notice.

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 2×10^7 1×10^5 at 2 A, 30 VDC or 1 A, 125 VAC 2×10^6 at 1 A, 30 VDC or .5 A, 125 VAC
Set Time (typical)	3 ms at nominal coil voltage
Reset Time (typical)	3 ms at nominal coil voltage
Bounce (typical)	3 ms
Dielectric Strength (at sea level)	1500 Vrms contact to coil 1000 Vrms between contact sets 1000 Vrms across contacts Meets FCC Part 68.302 lightning surge Meets FCC Part 68.304 V dielectric
Insulation Resistance	1000 megohms min. at 20°C, 500 VDC, 50% RH
Ambient Temperature **Operating** **Storage**	At nominal coil voltage -40°C (-40°F) to 85°C (185°F) -40°C (-40°F) to 115°C (239°F)
Vibration	50 g at 10–500 Hz
Shock	50 g
Enclosure	P.B.T. polyester
Terminals	Tinned copper alloy, P.C.
Max. Solder Temp.	270°C (518°F)
Max. Solder Time	5 seconds
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 seconds
Weight	5 grams

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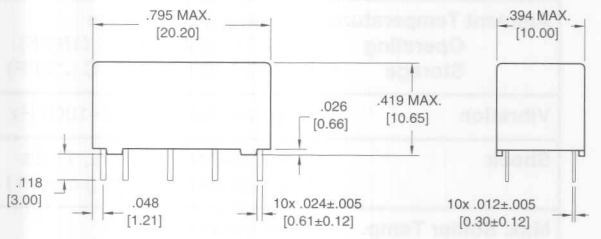
RELAY ORDERING DATA

STANDARD SINGLE COIL				
COIL SPECIFICATIONS				ORDER NUMBER
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%	Set Reset VDC	
3	9.0	90	2.25	AZ832P1–2C–3DE
5	15.0	250	3.75	AZ832P1–2C–5DE
12	36.0	1,440	9.0	AZ832P1–2C–12DE
24	60.0	4,000	18.0	AZ832P1–2C–24DE
SENSITIVE SINGLE COIL				
3	10.4	120	2.25	AZ832P1–2C–3DSE
5	17.2	330	3.75	AZ832P1–2C–5DSE
12	41.6	1,920	9.0	AZ832P1–2C–12DSE
24	83.1	7,680	18.0	AZ832P1–2C–24DSE

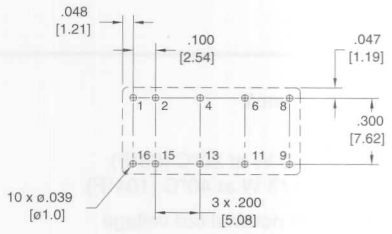
STANDARD DUAL COIL				
COIL SPECIFICATIONS				ORDER NUMBER
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%	Set Reset VDC	
3	6.4	45	2.25	AZ832P2–2C–3DE
5	10.6	125	3.75	AZ832P2–2C–5DE
12	25.5	720	9.0	AZ832P2–2C–12DE
24	42.8	2,040	18.0	AZ832P2–2C–24DE
SENSITIVE DUAL COIL				
3	7.3	60	2.25	AZ832P2–2C–3DSE
5	12.3	167	3.75	AZ832P2–2C–5DSE
12	29.4	960	9.0	AZ832P2–2C–12DSE
24	58.8	3,840	18.0	AZ832P2–2C–24DSE

MECHANICAL DATA



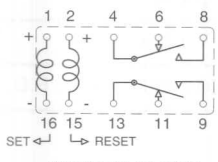
PC BOARD LAYOUT

TWO COIL VERSION



WIRING DIAGRAM

TWO COIL LATCHING



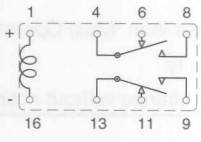
(WATCH FOR POLARITY)

NOTE:

DIAGRAMS SHOW THE "RESET" POSITION BEFORE ENERGIZED WITH POLARITY AS SHOWN

WIRING DIAGRAM

SINGLE COIL LATCHING



(WATCH FOR POLARITY)

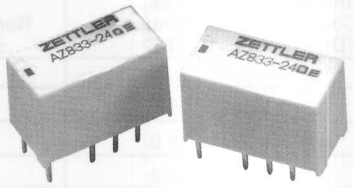
Dimensions in inches with metric equivalents in parentheses. Tolerance: ± .010"

AZ833

MICROMINIATURE POLARIZED RELAY

FEATURES

- Microminiature size: up to 50% less board area than previous generation telecom relays
- High dielectric and surge voltage:
  2.5 KV surge (per Bellcore TA–NWT–001089)
  1.5 KV surge (per FCC Part 68)
  1,000 Vrms, open contacts
- Low power consumption: 79 mW pickup
- Stable contact resistance for low level signal switching
- Epoxy sealed for automatic wave soldering and cleaning
- UL and CSA approval pending
- All plastics meet UL94 V–O, 30 min. oxygen index



CONTACTS

Arrangement	DPDT (2 Form C) Bifurcated crossbar contacts
Ratings	Resistive load: Max. switched power: 60 W or 62.5 VA Max. switched current: 2.0 A Max. switched voltage: 220 VDC or 250 VAC
Rated Load **UL/CSA** (Pending)	0.5 A at 125 VAC 2.0 A at 30 VDC 0.3 A at 110 VDC
Material	Silver nickel gold plated Silver palladium available upon request

COIL (Polarized)

Power	
At Pickup Voltage (typical)	79 mW
Max. Continuous Dissipation	1.0 W at 20°C (68°F) 0.78 W at 40°C (104°F)
Temperature Rise	At nominal coil voltage 18°C (32°F)
Temperature	Max. 110°C (230°F)

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Relay has fixed coil polarity.
4. Specifications subject to change without notice.

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 1×10^8 1×10^5 at 0.5 A, 125 VAC, resistive 2×10^5 at 1.0 A, 30 VDC, resistive
Operate Time (typical)	3 ms at nominal coil voltage
Release Time (typical)	2 ms at nominal coil voltage (with no coil suppression)
Bounce (typical)	At 10 mA contact current 1 ms at operate or release
Dielectric Strength (at sea level)	See table
Dropout	Greater than 10% of nominal coil voltage
Insulation Resistance	10^9 ohms min. at 25°C, 500 VDC, 50% RH
Ambient Temperature **Operating** **Storage**	At nominal coil voltage -40°C (-40°F) to 85°C (185°F) -40°C (-40°F) to 110°C (230°F)
Vibration	Operational, 35 g, 10–1000 Hz
Shock	Operational, 50 g min., 11 ms Non-destructive, 150 g min., 11 ms
Max. Solder Temp. Temp./Time	See soldering profile
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 seconds
Weight	2.3 grams
Enclosure	P.B.T. polyester
Terminals	Tinned copper alloy, P.C.

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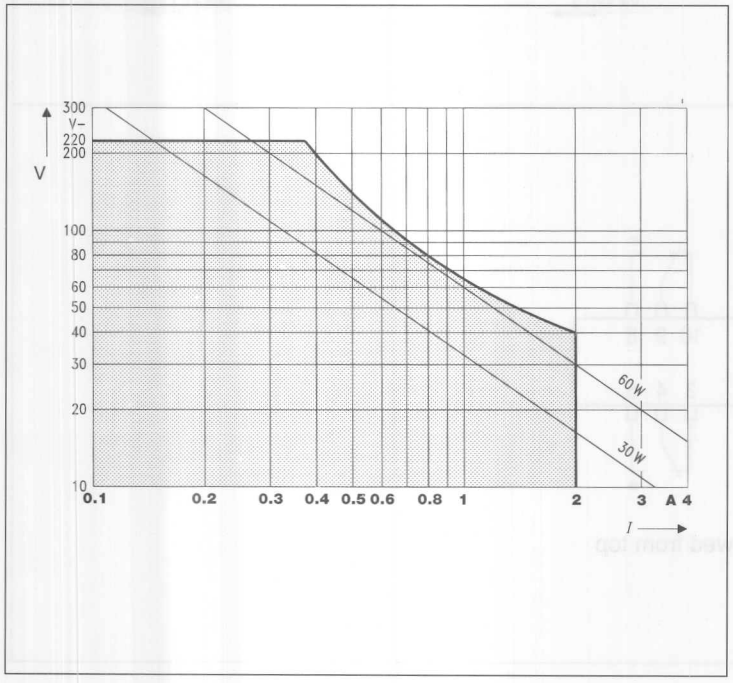
RELAY ORDERING DATA

STANDARD RELAYS				Order Number		
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%	Must Operate VDC	THT Through Hole	SMT Long	SMT Short
3	6.5	64.3	2.25	AZ833–3DE	AZ833S1–3DE	AZ833S2–3DE
4.5	9.8	145	3.38	AZ833–4.5DE	AZ833S1–4.5DE	AZ833S2–4.5DE
5	10.9	178	3.75	AZ833–5DE	AZ833S1–5DE	AZ833S2–5DE
6	13.0	257	4.50	AZ833–6DE	AZ833S1–6DE	AZ833S2–6DE
9	19.6	578	6.75	AZ833–9DE	AZ833S1–9DE	AZ833S2–9DE
12	26.2	1,029	9.00	AZ833–12DE	AZ833S1–12DE	AZ833S2–12DE
24	52.3	4114	18.00	AZ833–24DE	AZ833S1–24DE	AZ833S2–24DE

INITIAL DIELECTRIC STRENGTH (minimum)		SURGE		
	VRMS, 1 min.	Peak (V)	Rise Time (μS)	Decay Time* (9μS) (1/2 peak)
Between open contacts	1,000	1,500	10	160
Between contact sets	1,000	1,500	2	160
Between coil and contacts	1,800	2,500	2	10

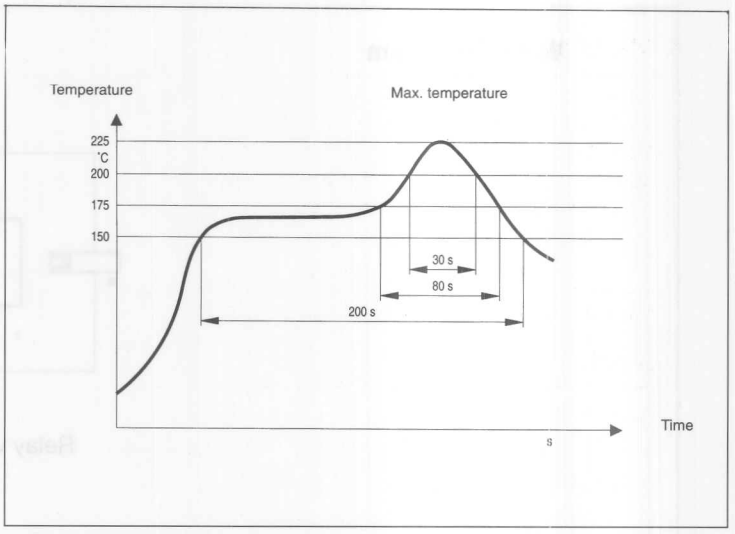
* Decay time measured from beginning of surge.

LOAD LIMIT CURVE



RECOMMENDED SOLDERING PROFILE

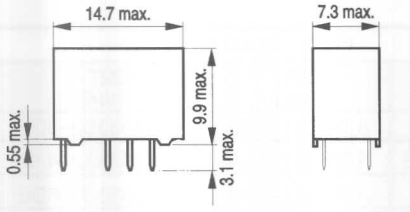
(Convection Soldering)



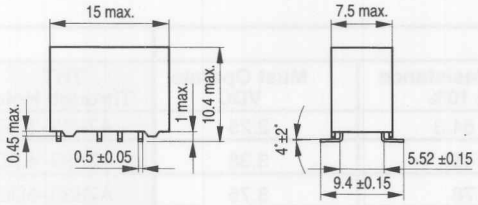
AZ833

MECHANICAL DATA

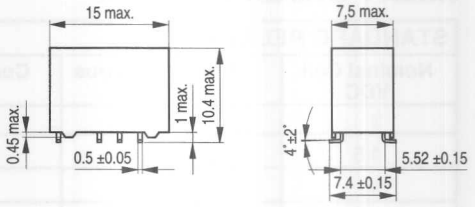
THT



SMT Long Terminals



SMT Short Terminals

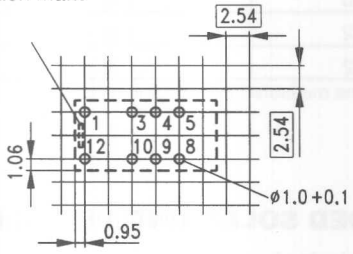


PCB Layout

Mounting hole layout

Viewed toward terminals

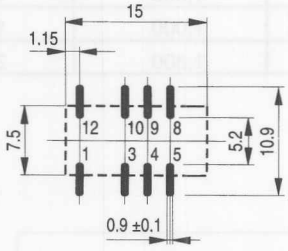
Orientation mark



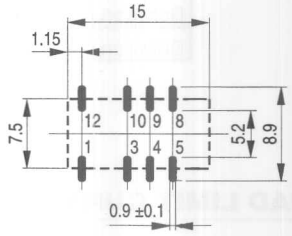
Solder Pad Layout

Viewed toward the component side of the PCB

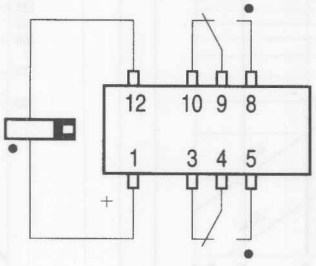
Long terminals



Short terminals



Wiring Diagram



Relay viewed from top

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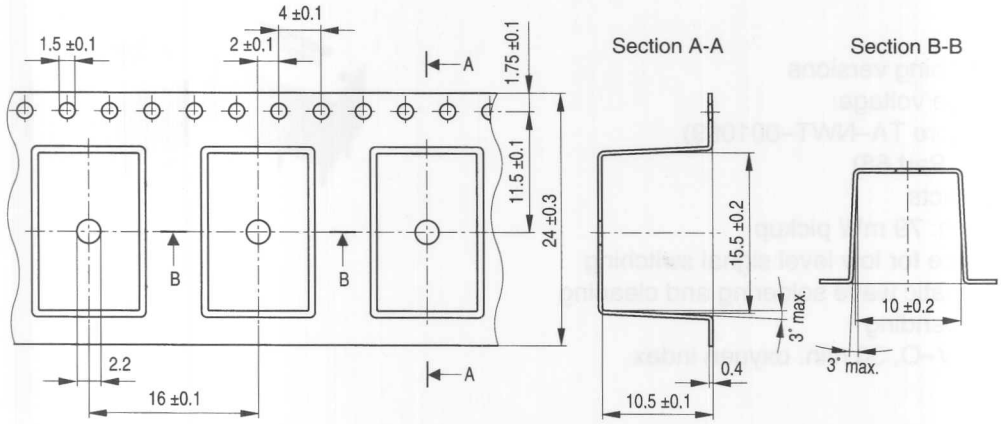
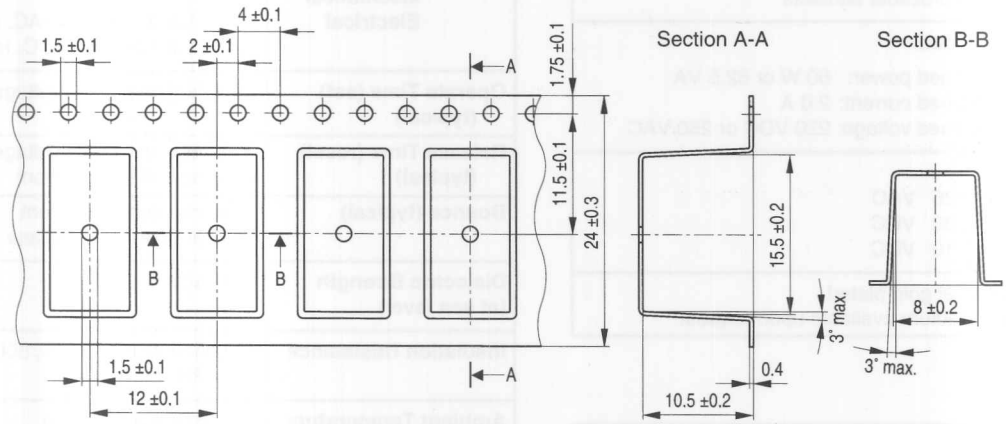
PACKAGING

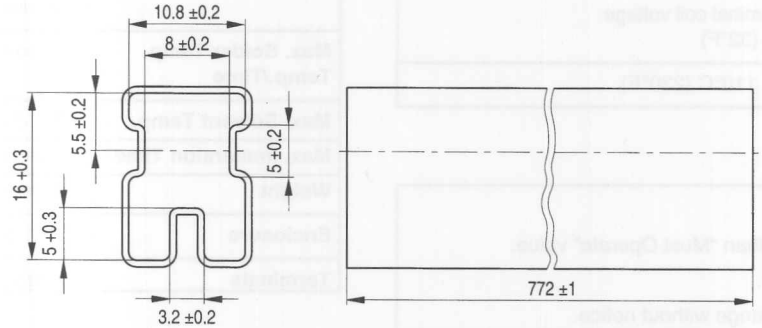
Tape and reel for SMT version with long terminals – AZ833S1



Tape and reel for SMT version with short terminals – AZ833S2



Tube for THT version – AZ833



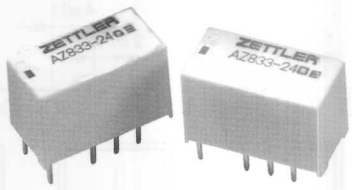
50 items / tube

AZ833P

MICROMINIATURE POLARIZED LATCHING RELAY

FEATURES

- Single and dual coil latching versions
- High dielectric and surge voltage:
  2.5 KV surge (per Bellcore TA–NWT–001089)
  1.5 KV surge (per FCC Part 68)
  1,000 Vrms, open contacts
- Low power consumption: 79 mW pickup
- Stable contact resistance for low level signal switching
- Epoxy sealed for automatic wave soldering and cleaning
- UL and CSA approval pending
- All plastics meet UL94 V–O, 30 min. oxygen index



CONTACTS

Arrangement	DPDT (2 Form C) Bifurcated crossbar contacts
Ratings	Resistive load: Max. switched power: 60 W or 62.5 VA Max. switched current: 2.0 A Max. switched voltage: 220 VDC or 250 VAC
Rated Load **UL/CSA** (Pending)	0.5 A at 125 VAC 2.0 A at 30 VDC 0.3 A at 110 VDC
Material	Silver nickel gold plated Silver palladium available upon request

COIL (Polarized)

Power	
At Pickup Voltage (typical)	79 mW (dual coil 39 mW (single coil)
Max. Continuous Dissipation	1.0 W at 20°C (68°F) 0.78 W at 40°C (104°F)
Temperature Rise	At nominal coil voltage 18°C (32°F)
Temperature	Max. 110°C (230°F)

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Relay has fixed coil polarity.
4. Specifications subject to change without notice.

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 1×10^8 1×10^5 at 0.5 A, 125 VAC, resistive 2×10^5 at 1.0 A, 30 VDC, resistive
Operate Time (set) (typical)	3 ms at nominal coil voltage
Release Time (reset) (typical)	3 ms at nominal coil voltage (with no coil suppression)
Bounce (typical)	At 10 mA contact current 1 ms at operate or release
Dielectric Strength (at sea level)	See table
Insulation Resistance	10^9 ohms min. at 25°C, 500 VDC, 50% RH
Ambient Temperature **Operating** **Storage**	At nominal coil voltage -40°C (-40°F) to 85°C (185°F) -40°C (-40°F) to 110°C (230°F)
Vibration	Operational, 35 g, 10–1000 Hz
Shock	Operational, 50 g min., 11 ms Non-destructive, 150 g min., 11 ms
Max. Solder Temp. Temp./Time	See soldering profile
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 seconds
Weight	2.5 grams
Enclosure	P.B.T. polyester
Terminals	Tinned copper alloy, P.C.

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RELAY ORDERING DATA

COIL SPECIFICATIONS

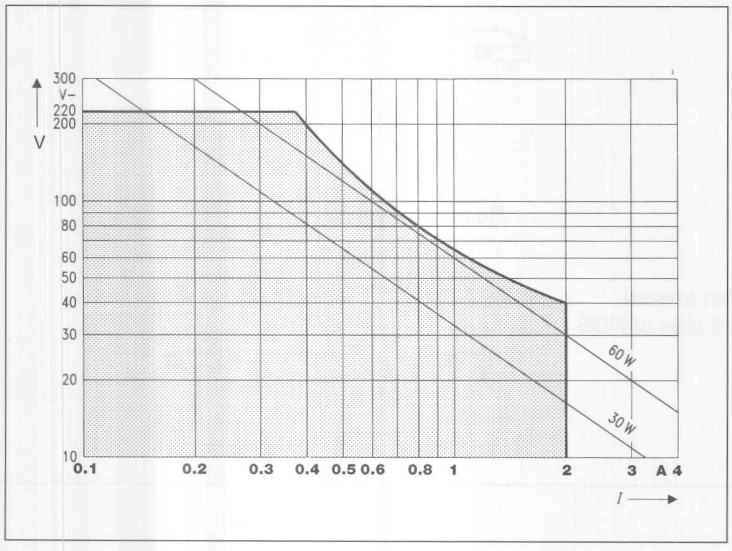
STANDARD RELAYS: Bistable, 2 coils – Silver palladium contacts				Order Number		
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%	Must Operate VDC	THT Through Hole	SMT Long	SMT Short
3	6.5	64.3	2.25	AZ833P2–3DE	AZ833P2S1–3DE	AZ833P2S2–3DE
4.5	9.8	145	3.38	AZ833P2–4.5DE	AZ833P2S1–4.5DE	AZ833P2S2–4.5DE
5	10.9	178	3.75	AZ833P2–5DE	AZ833P2S1–5DE	AZ833P2S2–5DE
6	13.0	257	4.50	AZ833P2–6DE	AZ833P2S1–6DE	AZ833P2S2–6DE
9	19.6	578	6.75	AZ833P2–9DE	AZ833P2S1–9DE	AZ833P2S2–9DE
12	26.2	1,029	9.00	AZ833P2–12DE	AZ833P2S1–12DE	AZ833P2S2–12DE
24	52.3	4114	18.00	AZ833P2–24DE	AZ833P2S1–24DE	AZ833P2S2–24DE

STANDARD RELAYS: Bistable, 1 coil – Silver palladium contacts				Order Number		
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%	Must Operate VDC	THT Through Hole	SMT Long	SMT Short
3	6.5	64.3	2.25	AZ833P1–3DE	AZ833P1S1–3DE	AZ833P1S2–3DE
4.5	9.8	145	3.38	AZ833P1–4.5DE	AZ833P1S1–4.5DE	AZ833P1S2–4.5DE
5	10.9	178	3.75	AZ833P1–5DE	AZ833P1S1–5DE	AZ833P1S2–5DE
6	13.0	257	4.50	AZ833P1–6DE	AZ833P1S1–6DE	AZ833P1S2–6DE
9	19.6	578	6.75	AZ833P1–9DE	AZ833P1S1–9DE	AZ833P1S2–9DE
12	26.2	1,029	9.00	AZ833P1–12DE	AZ833P1S1–12DE	AZ833P1S2–12DE
24	52.3	4114	18.00	AZ833P1–24DE	AZ833P1S1–24DE	AZ833P1S2–24DE

INITIAL DIELECTRIC STRENGTH (minimum)		SURGE		
	VRMS, 1 min.	Peak (V)	Rise Time (μS)	Decay Time* (9μS) (1/2 peak)
Between open contacts	1,000	1,500	10	160
Between contact sets	1,000	1,500	2	160
Between coil and contacts	1,800	2,500	2	10

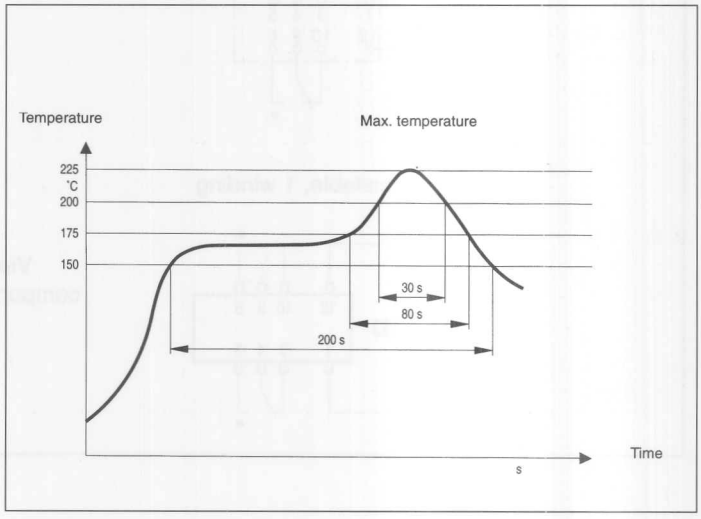
* Decay time measured from beginning of surge.

LOAD LIMIT CURVE



RECOMMENDED SOLDERING PROFILE

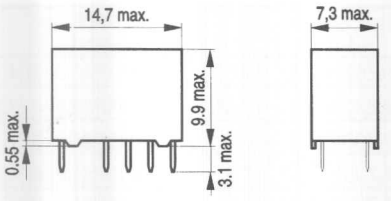
(Convection Soldering)



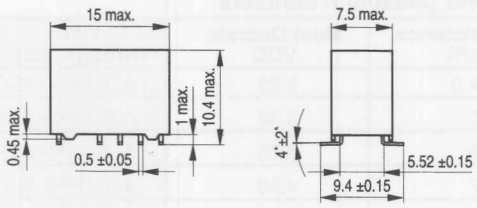
AZ833P

MECHANICAL DATA

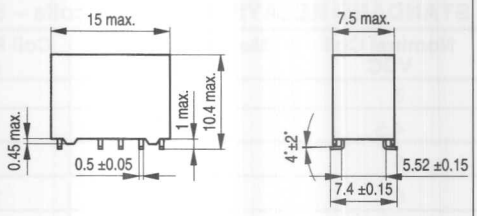
THT



SMT Long Terminals



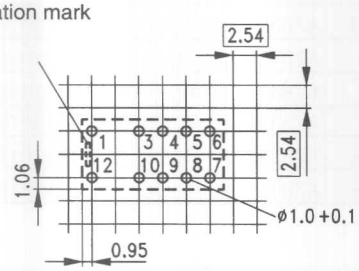
SMT Short Terminals



PCB Layout

Viewed toward terminals

Orientation mark

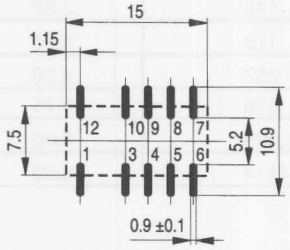


Note: Hole for pin 6 and 7 only for bistable with 2 windings

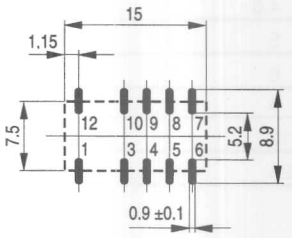
Solder Pad Layout

Viewed toward the component side of the PCB

Long terminals



Short terminals



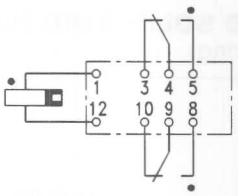
Note: Solder pad for pin 6 and 7 only for bistable with 2 windings

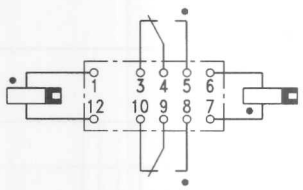
Wiring Diagram

bistable, 1 winding

Bistable, 2 windings

Viewed toward terminal

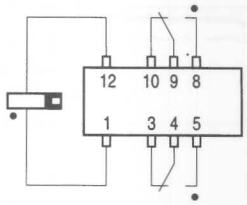


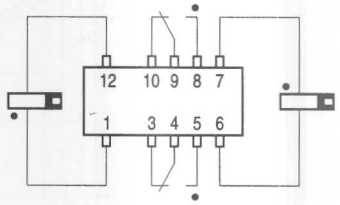


bistable, 1 winding

Bistable, 2 windings

Viewed toward component side of PCB





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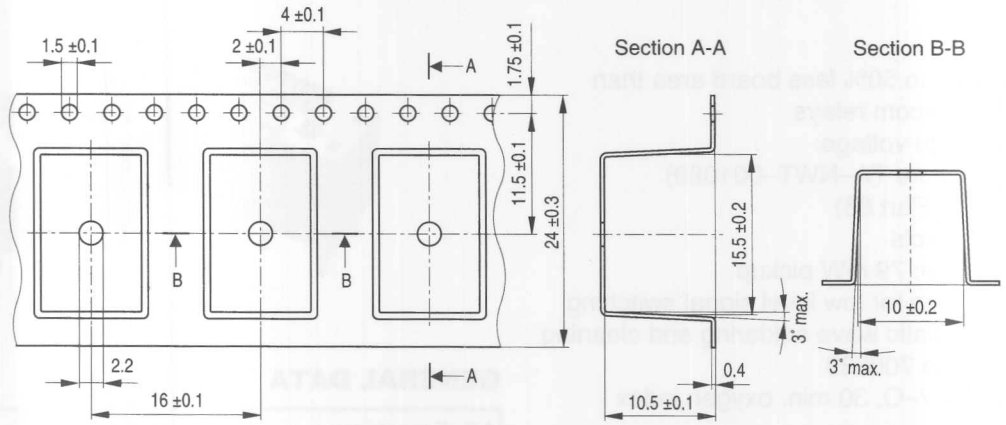
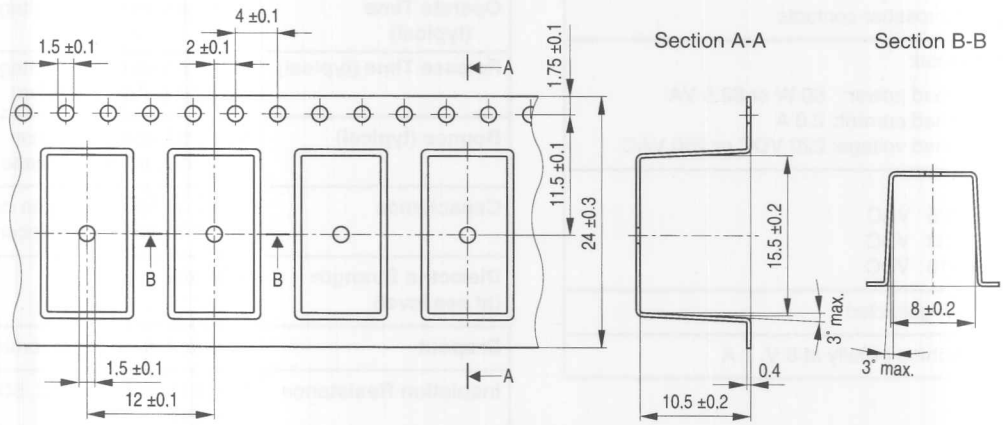
PACKAGING

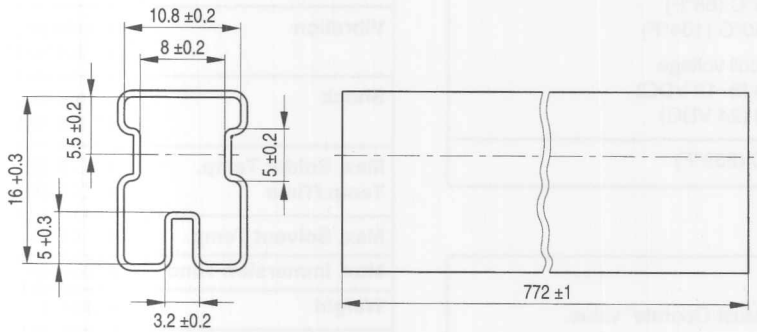
Tape and reel for SMT version with long terminals – AZ833P1S1 or AZ833P2S1



Tape and reel for SMT version with short terminals – AZ833P1S2 or AZ833P2S2



Tube for THT version – AZ833P1 or AZ833P2



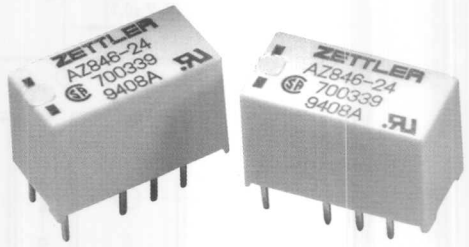
50 items / tube

AZ846

MICROMINIATURE POLARIZED RELAY

FEATURES

- Microminiature size: up to 50% less board area than previous generation telecom relays
- High dielectric and surge voltage:
  2.5 KV surge (per Bellcore TA–NWT–001089)
  1.5 KV surge (per FCC Part 68)
  1,000 Vrms, open contacts
- Low power consumption: 79 mW pickup
- Stable contact resistance for low level signal switching
- Epoxy sealed for automatic wave soldering and cleaning
- UL file E43203; CSA file 700339
- All plastics meet UL94 V–O, 30 min. oxygen index



CONTACTS

Arrangement	DPDT (2 Form C) Bifurcated crossbar contacts
Ratings	Resistive load: Max. switched power: 60 W or 62.5 VA Max. switched current: 2.0 A Max. switched voltage: 220 VDC or 250 VAC
Rated Load **UL/CSA**	0.5 A at 125 VAC 2.0 A at 30 VDC 0.3 A at 110 VDC
Material	Silver alloy; gold clad
Resistance	<.100 milliohms initially at 6 V, 1 A

COIL (Polarized)

Power	
At Pickup Voltage (typical)	79 mW (3–12 VDC) 113 mW (24 VDC)
Max. Continuous Dissipation	1.0 W at 20°C (68°F) 0.78 W at 40°C (104°F)
Temperature Rise	At nominal coil voltage 18°C (32°F) (3–12 VDC) 25°C (45°F) (24 VDC)
Temperature	Max. 115°C (239°F)

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Relay has fixed coil polarity.
4. Specifications subject to change without notice.

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 1 x 10^8 at 3Hz 1 x 10^5 at 0.5 A, 125 VAC, resistive 2 x 10^5 at 1.0 A, 30 VDC, resistive
Operate Time (typical)	2 ms at nominal coil voltage
Release Time (typical)	1 ms at nominal coil voltage (with no coil suppression)
Bounce (typical)	At 10 mA contact current 1 ms at operate or release
Capacitance	< 1 pF at 10 KHz—open contacts < 1 pF at 10 KHz—adjacent contact sets
Dielectric Strength (at sea level)	See table
Dropout	Greater than 10% of nominal coil voltage
Insulation Resistance	10^9 ohms min. at 25°C, 500 VDC, 50% RH
Ambient Temperature **Operating** **Storage**	At nominal coil voltage -40°C (-40°F) to 95°C (203°F) (3–12 VDC) -40°C (-40°F) to 90°C (194°F) (24 VDC) -40°C (-40°F) to 115°C (239°F)
Vibration	Operational, 20 g, 10–55 Hz Non-destructive, 30 g, 10–55 Hz
Shock	Operational, 50 g min., 11 ms Non-destructive, 100 g min., 11 ms
Max. Solder Temp. Temp./Time	350°C (662°F) for 3 seconds 260°C (500°F) for 10 seconds
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 seconds
Weight	1.8 grams
Enclosure	P.B.T. polyester
Terminals	Tinned copper alloy, P.C.

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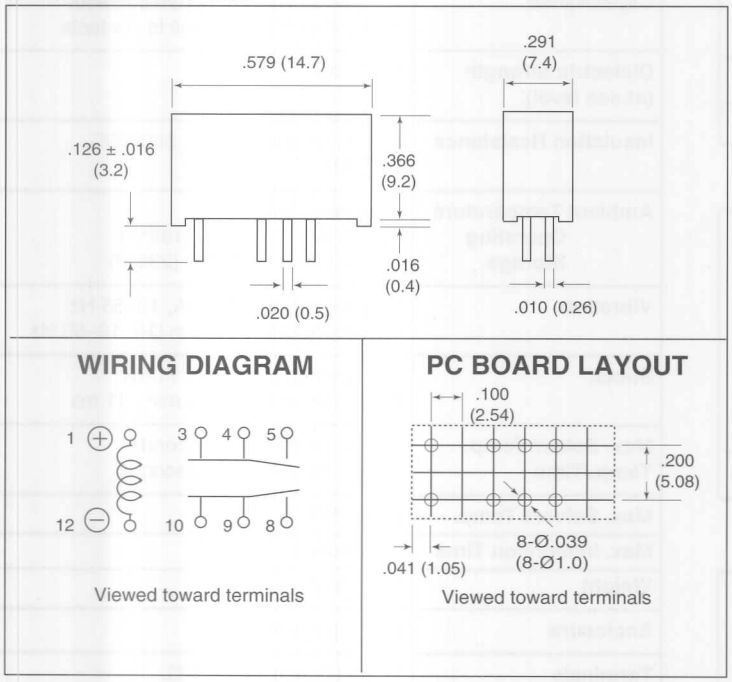
RELAY ORDERING DATA

STANDARD RELAYS				ORDER NUMBER
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%	Must Operate VDC	
3	6.9	64	2.25	AZ846–3
4.5	10.4	145	3.38	AZ846–4
5	11.5	178	3.75	AZ846–5
6	13.8	257	4.5	AZ846–6
9	20.8	579	6.75	AZ846–9
12	27.7	1,028	9.0	AZ846–12
24	46.3	2,880	18.0	AZ846–24

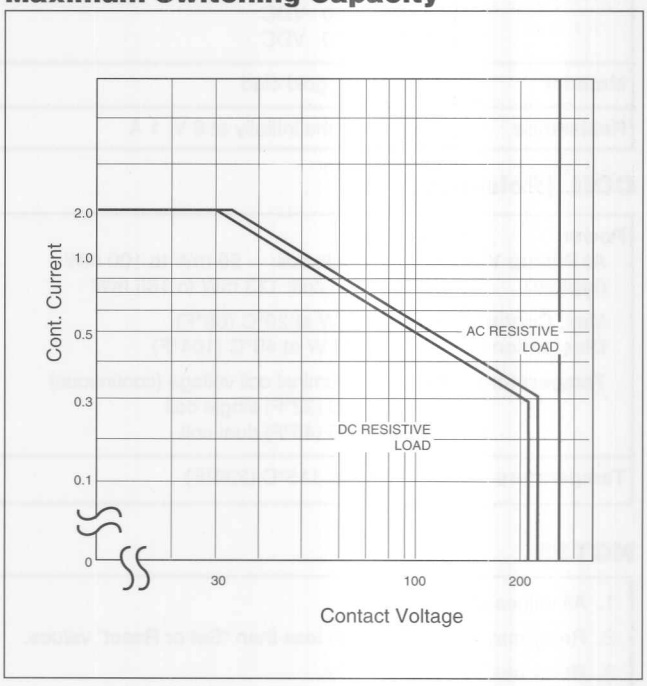
INITIAL DIELECTRIC STRENGTH (minimum)		SURGE		
	VRMS, 1 min.	Peak (V)	Rise Time (μS)	Decay Time* (9μS) (1/2 peak)
Between open contacts	1,000	1,500	10	160
Between contact sets	1,000	1,500	2	160
Between coil and contacts	1,800	2,500	2	10

* Decay time measured from beginning of surge.

Mechanical Data



Maximum Switching Capacity



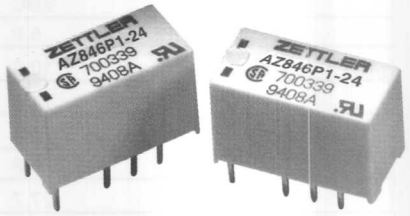
Dimensions in inches with metric equivalents in parentheses. Tolerance: ±0.010"

AZ846P

MICROMINIATURE POLARIZED LATCHING RELAY

FEATURES

- Single and dual coil latching versions
- High dielectric and surge voltage:
  2,5 KV surge (per Bellcore TA–NWT–001089)
  1.5 KV surge (per FCC Part 68)
  1,000 Vrms, open contacts
- Low power consumption: 56 mW set and reset
- Stable contact resistance for low level signal switching
- Epoxy sealed for automatic wave soldering and cleaning
- UL file E43203; CSA file 700339
- All plastics meet UL94 V–O, 30 min. oxygen index



CONTACTS

Arrangement	DPDT (2 Form C) Bifurcated crossbar contacts
Ratings	Resistive load: Max. switched power: 60 W or 62.5 VA Max. switched current: 2.0 A Max. switched voltage: 220 VDC or 250 VAC
Rated Load **UL/CSA**	0.5 A at 125 VAC 2.0 A at 30 VDC 0.3 A at 110 VDC
Material	Silver alloy; gold clad
Resistance	< 50 milliohms initially at 6 V, 1 A

COIL (Polarized)

Power	
At Pickup Voltage (typical)	Single coil: 56 mW to 100 mW Dual coil: 113 mW to 165 mW
Max. Continuous Dissipation	1.0 W at 20°C (68°F) 0.78 W at 40°C (104°F)
Temperature Rise	At nominal coil voltage (continuous) 18°C (32°F) single coil 25°C (45°F) dual coil
Temperature	Max. 115°C (239°F)

NOTES

1. All values at 20°C (68°F).
2. Relay may set or reset with less than "Set or Reset" values.
3. Relay has fixed coil polarity.
4. Specifications subject to change without notice.

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 1 x 10^8 at 3Hz 1 x 10^5 at 0.5 A, 125 VAC, resistive 2 x 10^5 at 1.0 A, 30 VDC, resistive
Set or Reset Time	6 ms maximum
Bounce (typical)	At 10 mA contact current 1 ms at set 1 ms at reset
Capacitance	< 1.5 pF at 10 KHz—open contacts < 2.0 pF at 10 KHz—coil to contacts
Dielectric Strength (at sea level)	See table
Insulation Resistance	10^9 ohms min. at 25°C, 500 VDC, 50% RH
Ambient Temperature **Operating** **Storage**	At nominal coil voltage -40°C (-40°F) to 85°C (185°F) -40°C (-40°F) to 115°C (239°F)
Vibration	Operational, 3.3 mm DA, 10–55 Hz Non-destructive, 5.0 mm DA, 10–55 Hz
Shock	Operational, 50 g min., 11 ms Non-destructive, 100 g min., 11 ms
Max. Solder Temp. Temp./Time	350°C (662°F) for 3 seconds 260°C (500°F) for 10 seconds
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 seconds
Weight	1.8 grams
Enclosure	P.B.T. polyester
Terminals	Tinned copper alloy, P.C.

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RELAY ORDERING DATA

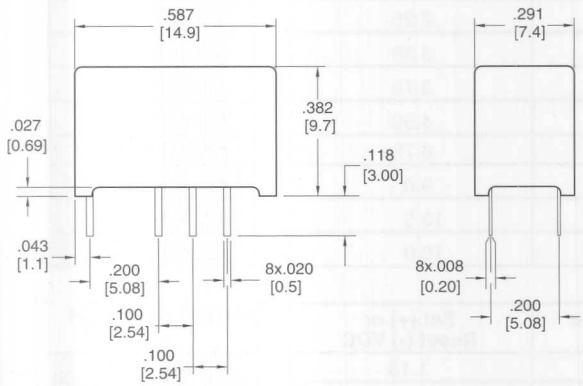
SINGLE COIL LATCHING - COIL SPECIFICATIONS				ORDER NUMBER
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%	Set (+) or Reset (-) VDC	
1.5	4.0	22.5	1.13	AZ846P1–1.5
3	8.1	90	2.25	AZ846P1–3
4.5	12.1	203	3.38	AZ846P1–4.5
5	13.5	250	3.75	AZ846P1–5
6	16.2	360	4.50	AZ846P1–6
9	24.3	810	6.75	AZ846P1–9
12	32.4	1440	9.0	AZ846P1–12
18	48.6	2160	13.5	AZ846P1–18
24	64.8	3840	18.0	AZ846P1–24
DUAL COIL LATCHING - COIL SPECIFICATIONS				**ORDER NUMBER**
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%	Set (+) or Reset (-) VDC	
1.5	4.0	11.25	1.13	AZ846P2–1.5
3	8.1	45	2.25	AZ846P2–3
4.5	12.1	101	3.38	AZ846P2–4.5
5	13.5	125	3.75	AZ846P2–5
6	16.2	180	4.50	AZ846P2–6
9	24.3	405	6.75	AZ846P2–9
12	32.4	720	9.0	AZ846P2–12
18	48.6	1080	13.5	AZ846P2–18
24	64.8	1920	18.0	AZ846P2–24

INITIAL DIELECTRIC STRENGTH (minimum)		SURGE		
	VRMS, 1 min.	Peak (V)	Rise Time (µS)	Decay Time* (9µS) (1/2 peak)
Between open contacts	1,000	1,500	10	160
Between contact sets	1,000	1,500	2	160
Between coil and contacts	1,800	2,500	2	10

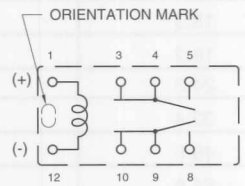
* Decay time measured from beginning of surge.

AZ846P

MECHANICAL DATA – AZ846P1 Single Coil



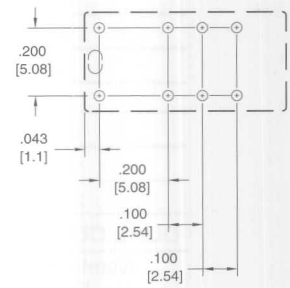
WIRING DIAGRAMS



Deenergized or reset condition

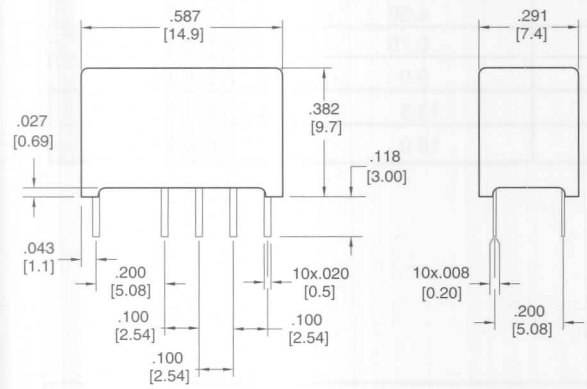
Viewed towards terminals

PC BOARD LAYOUT

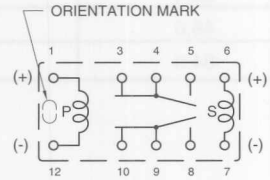


Viewed towards terminals

MECHANICAL DATA – AZ846P2 Dual Coil



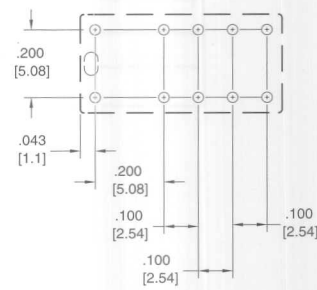
WIRING DIAGRAMS



Reset condition

Viewed towards terminals

PC BOARD LAYOUT



Viewed towards terminals

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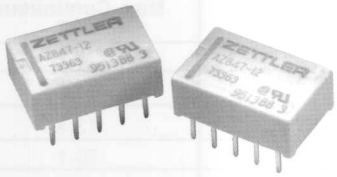
MICROMINIATURE POLARIZED RELAY

FEATURES

- Microminiature size: Height: .217 inches (5.5 mm); Length: .551 inches (14 mm); Width: .354 inches (9 mm)
- High sensitivity, 79 mW pickup
- Monostable and bistable (latching) two coil versions available
- Meets FCC Part 68.302 1500 V lightning surge
- DIP terminal layout, fits 10 pin IC socket
- Epoxy sealed for automatic wave soldering and cleaning
- UL file E43203, CSA 73363



CONTACTS

Arrangement	DPDT (2 Form C) Bifurcated crossbar contacts
Ratings	Resistive load: Max. switched power: 60 W or 62.5 VA Max. switched current: 2 A Max. switched voltage: 220 VDC or 250 VAC Max. carry current: 2 A
Rated Load UL/CSA	0.5 A at 125 VAC res. 2.0 A at 30 VDC res. 0.3 A at 110 VDC res.
Material	Silver palladium; gold clad
Resistance	< 50 milliohms initially

COIL (Polarized)

Power	
At Pickup Voltage (typical)	Single side stable: 70–150 mW Bistable (latching) two coil: 100–150 mW
Max. Continuous Dissipation	700 mW at 20°C (68°F) ambient 530 mW at 40°C (104°F) ambient
Temperature Rise	18°C (32°F) at nominal coil voltage
Temperature	Max. 105°C (221°F)

NOTES

1. All values at 20°C (68°F).
2. Relay has fixed coil polarity.
3. Relay may pull in with less than "Must Operate" value.
4. Relay adjustment may be affected if undue pressure is exerted on relay case.
5. For complete isolation between the relay's magnetic fields, it is recommended that a .197" (5.0 mm) space be provided between adjacent relays.
6. Specifications subject to change without notice.

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 1×10^8 5×10^5 at 1 A, 30 VDC 2×10^5 at 0.5 A, 125VAC
Operate Time (typical)	2 ms at nominal coil voltage
Release Time (typical)	1 ms at nominal coil voltage (with no coil suppression)
Set Time (bistable versions)	2 ms at nominal coil voltage (typical)
Reset Time (bistable versions)	2 ms at nominal coil voltage (typical)
Dropout	Greater than 10% of nominal coil voltage
Capacitance	Contact to contact: 0.5 pF Contact set to contact set: 1.5 pF Contact to coil: 1.0 pF
Dielectric Strength (at sea level)	1000 Vrms between contact sets 1000 Vrms across contacts 1,250 Vrms contact to coil Meets FCC part 68.302 1500 V lightning surge
Insulation Resistance	1000 megohms min. at 25°C, 500 VDC, 50% RH
Ambient Temperature **Operating** **Storage**	At nominal coil voltage -40°C (-40°F) to 85°C (185°F) -40°C (-40°F) to 105°C (221°F)
Vibration	.130" DA at 10–55 Hz
Shock	50 g
Enclosure	LCP
Terminals	Tinned copper alloy, P.C.
Max. Solder Temp.	250°C (482°F)
Max. Solder Time	5 seconds
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 seconds
Weight	1.2 grams

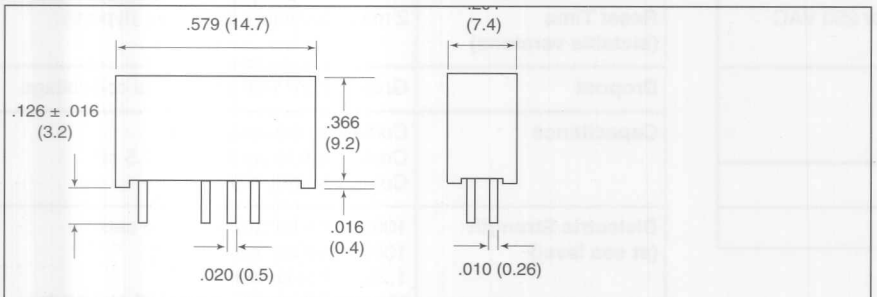
AZ847

RELAY ORDERING DATA

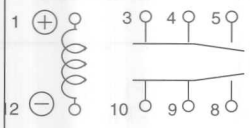
SINGLE SIDE STABLE				
COIL SPECIFICATIONS				ORDER NUMBER
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%	Must Operate VDC	
3	6.7	64.3	2.1	AZ847–3
5	11.2	178	3.5	AZ847–5
6	13.4	257	4.2	AZ847–6
9	20.1	579	6.3	AZ847–9
12	26.8	1,028	8.4	AZ847–12
24	44.9	2,880	16.8	AZ847–24

BISTABLE (LATCHING) TWO COIL					
COIL SPECIFICATIONS					ORDER NUMBER
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%		Must Operate VDC	
		Coil I	Coil II		
3	5.6	45	45	2.1	AZ847P2–3
5	9.4	125	125	3.5	AZ847P2–5
6	11.2	180	180	4.2	AZ847P2–6
9	16.8	405	405	6.3	AZ847P2–9
12	22.4	720	720	8.4	AZ847P2–12
24	36.7	1,920	1,920	16.8	AZ847P2–24

MECHANICAL DATA

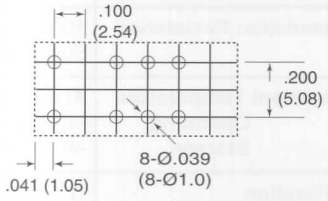


WIRING DIAGRAM



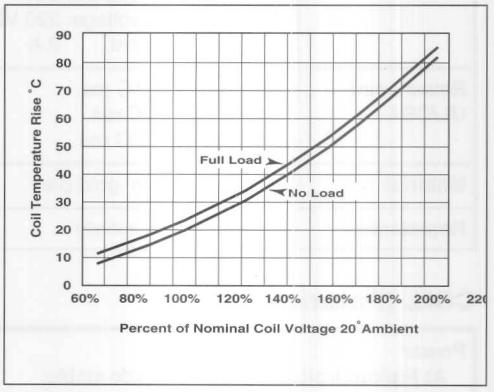
Viewed toward terminals

PC BOARD LAYOUT

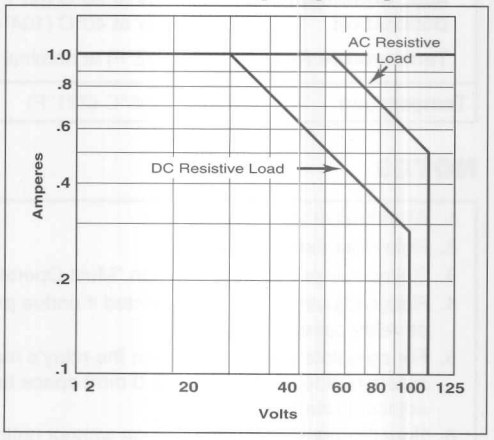


Viewed toward terminals

Coil Temperature Rise



Maximum Switching Capacity



Dimensions in inches with metric equivalents in parentheses. Tolerance: ±0.010"

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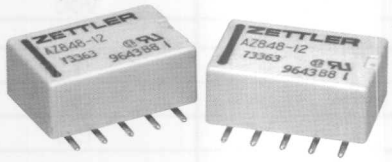
MICROMINIATURE SURFACE MOUNT POLARIZED RELAY

FEATURES

- High dielectric and surge voltage: 1.5 KV surge (per FCC Part 68) 750 VRMS open contacts
- Low power consumption: 56 mW set
- Non-latching and latching versions
- Single coil and dual coil versions
- Stable contact resistance for low level signal switching
- Epoxy sealed for automatic wave soldering and cleaning
- UL file E43203, CSA 73363
- All plastics meet UL94 V-0, 30 min. oxygen index



CONTACTS

Arrangement	DPDT (2 Form C) Bifurcated crossbar contacts
Ratings	Non-inductive load: Max. switched power: 60 W or 62.5 VA Max. switched current: 2 A Max. switched voltage: 220 VDC or 250 VAC
Rated Load UL/CSA	0.5 A at 125 VAC res. 2.0 A at 30 VDC res. 0.3 A at 110 VDC res.
Material	Silver palladium; gold clad
Resistance	< 50 milliohms initially at 6 V, 0.1 A

COIL

Power	
At Pickup Voltage (typical)	AZ848: 79 mW to 169 mW AZ848P1: 57 mW to 85 mW AZ848P2: 110 mW to 170 mW
Max. Continuous Dissipation	826 mW at 20°C (68°F) ambient 652 mW at 40°C (104°F) ambient
Temperature Rise	At nominal coil voltage 18°C (32°F) (3 - 12 VDC coils) 25°C (45°F) (18, 24 VDC coils) 34°C (61°F) (48 VDC coils)
Temperature	Max. 115°C (239°F)

NOTES

1. All values at 20°C (68°F).
2. Relay has fixed coil polarity.
3. Relay may pull in with less than "Must Operate" value.
4. Relay adjustment may be affected if undue pressure is exerted on relay case.
5. For complete isolation between the relay's magnetic fields, it is recommended that a .197" (5.0 mm) space be provided between adjacent relays.
6. Specifications subject to change without notice.

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 1 x 10^8 operations at 3 Hz 2 x 10^5 operations at 0.5 A, 125 VAC, resistive 5 x 10^5 operations at 1.0 A, 30 VDC, resistive
Operate Time (typical)	2 ms at nominal coil voltage
Release Time (typical)	1 ms at nominal coil voltage (with no coil suppression)
Bounce (typical)	1 ms (at nominal coil voltage)
Capacitance	< 0.5 pF open and adjacent contacts < 1.0 pF contact to coil
Dielectric Strength (at sea level)	See table
Insulation Resistance	10^9 ohms min. at 500 VDC
Dropout	Greater than 10% of nominal coil voltage
Ambient Temperature **Operating** **Storage**	At nominal coil voltage -40°C (-40°F) to 85°C (185°F) -40°C (-40°F) to 85°C (185°F)
Vibration	Operational, 3.3 mm DA, 10 - 55 Hz Non-Destructive, 5.5 mm DA, 10 -55 Hz
Shock	Operational, 50g min., 11 ms Non-Destructive, 100 g min., 6 ms
Enclosure	LCP
Terminals	Tinned copper alloy, P.C.
Max. Solder Temp.	See charts
Max. Solder Time	See charts
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 seconds
Weight	1.5 grams

RELAY ORDERING DATA

SINGLE SIDE STABLE (Standard, Non-Latching)				
COIL SPECIFICATIONS				ORDER NUMBER
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%	Must Operate VDC	
1.5	3.7	16.1	1.13	AZ848–1.5
3	7.3	64.3	2.25	AZ848–3
4.5	10.9	145	3.38	AZ848–4.5
5	12.1	178	3.75	AZ848–5
6	14.6	257	4.5	AZ848–6
9	21.9	579	6.75	AZ848–9
12	29.1	1,028	9.0	AZ848–12
18	36.6	1,620	13.5	AZ848–18
24	48.7	2,880	18.0	AZ848–24
48	79.6	7,680	36.0	AZ848–48

RELAY ORDERING DATA

SINGLE COIL (Latching)				
COIL SPECIFICATIONS				ORDER NUMBER
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%	Set (+)/Reset (-) VDC	
1.5	4.3	22.5	1.13	AZ848P1–1.5
3	8.6	90	2.25	AZ848P1–3
4.5	12.9	203	3.38	AZ848P1–4.5
5	14.4	250	3.75	AZ848P1–5
6	17.2	360	4.5	AZ848P1–6
9	25.8	810	6.75	AZ848P1–9
12	34.5	1,440	9.0	AZ848P1–12
18	42.2	2,160	13.5	AZ848P1–18
24	56.3	3,840	18.0	AZ848P1–24

RELAY ORDERING DATA

DUAL COIL (Latching)				
COIL SPECIFICATIONS				ORDER NUMBER
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance (each coil) ± 10%	Set/Reset VDC	
1.5	3.0	11.25	1.13	AZ848P2–1.5
3	6.1	45	2.25	AZ848P2–3
4.5	9.1	101	3.38	AZ848P2–4.5
5	10.2	125	3.75	AZ848P2–5
6	12.2	180	4.5	AZ848P2–6
9	25.8	405	6.75	AZ848P2–9
12	24.4	720	9.0	AZ848P2–12
18	29.9	1,080	13.5	AZ848P2–18
24	39.8	1,920	18.0	AZ848P2–24

INITIAL DIELECTRIC AND SURGE STRENGTH (minimum)

		SURGE		
	VRMS, 1 min.	Peak (V)	Rise Time	Decay Time
Between Open Contacts	750	1500	10 µs	160 µs
Between Contact Sets	750	1500	10 µs	160 µs
Between Coil and Contacts	1000	1500	10 µs	160 µs

Decay time measured from beginning of surge.

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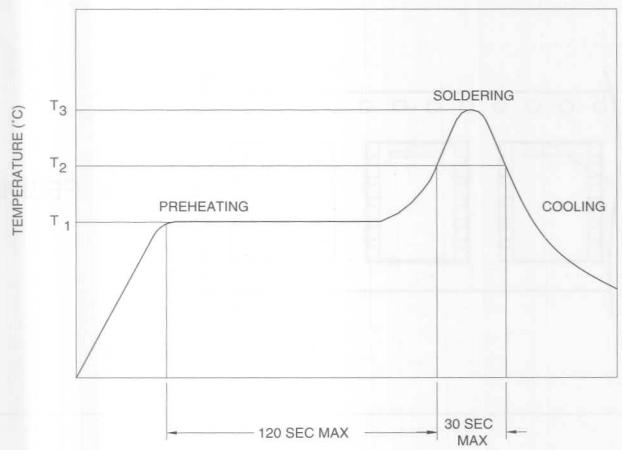
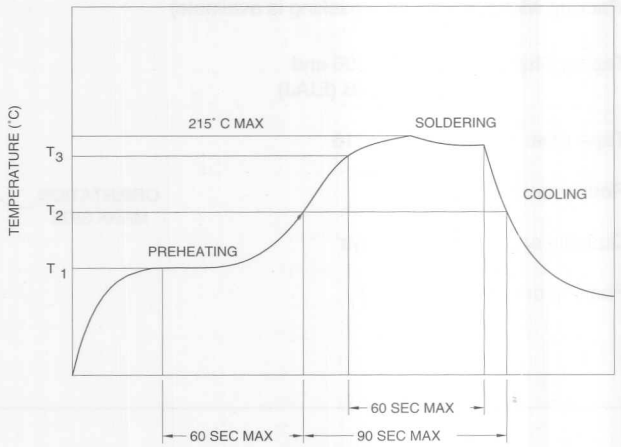
SOLDERING DATA

IRS (Infrared Reflow Soldering)



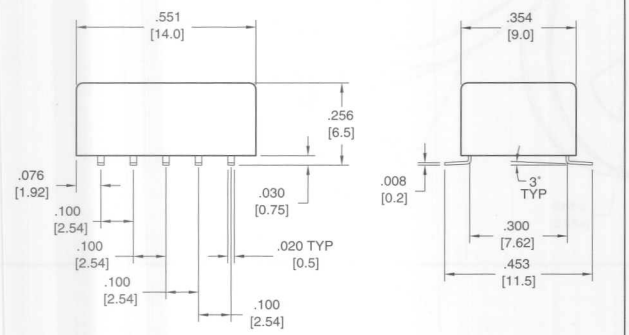
T3= 245°C MAX
T2= 200°C MAX
T1= 165°C MAX

VPS (Vapor Phase Soldering)

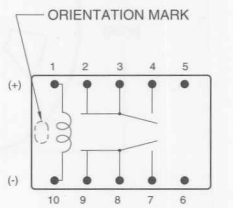


T3= 200°C MAX
T2= 165°C MAX
T1= 100°C MAX

MECHANICAL DATA

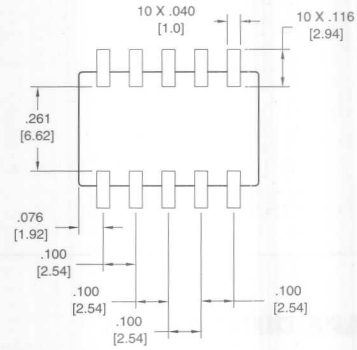


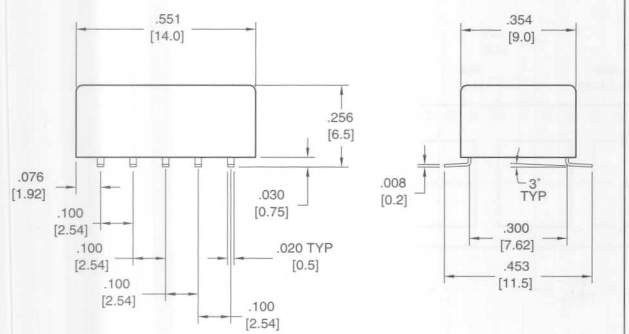
WIRING DIAGRAMS
VIEWED TOWARDS TERMINALS



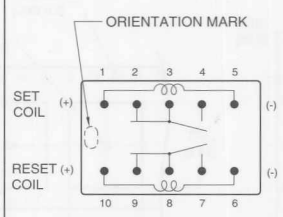
DEENERGIZED OR RESET CONDITION

PC BOARD LAYOUT
VIEWED TOWARDS TERMINALS



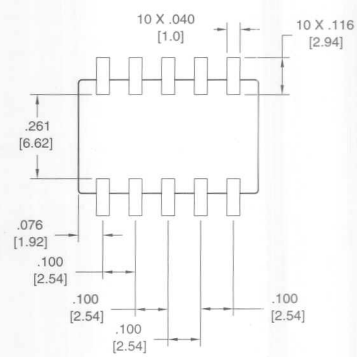


WIRING DIAGRAMS
VIEWED TOWARDS TERMINALS



RESET CONDITION

PC BOARD LAYOUT
VIEWED TOWARDS TERMINALS

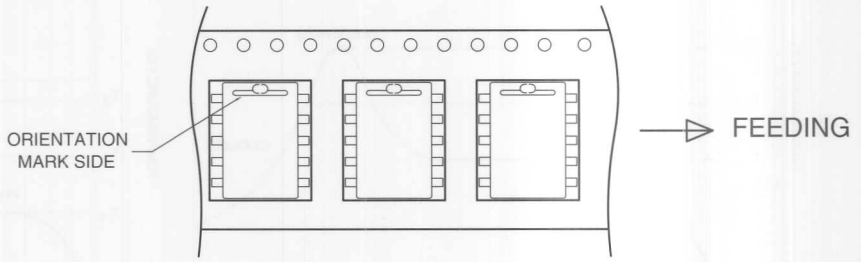


Dimensions in inches with metric equivalents in parentheses. Tolerance: ±0.010"

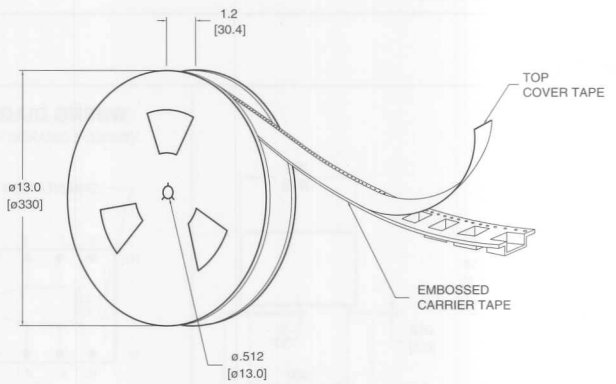
PACKING

(1) Packing Method (only tape packing is available)

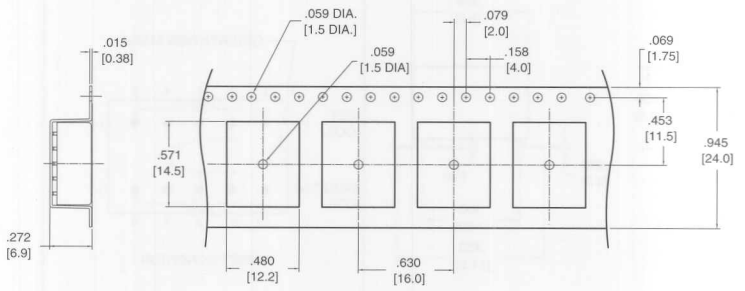
- Taping Standards: JIS C 0806 and RC - 1009B (EIAJ)
- Tape type: TB2416 or TE2416
- Reel type: R24D
- Quantity on 1 reel: 500 relays
- Packing orientation code: B



REEL DIMENSIONS



TAPE DIMENSIONS



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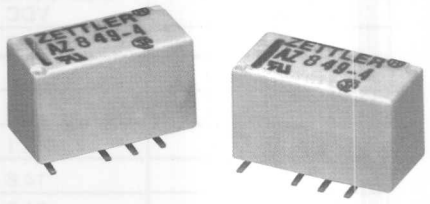
MICROMINIATURE SURFACE MOUNT POLARIZED RELAY



FEATURES

- High dielectric and surge voltage: 2.5 KV surge (per Bellcore TA-NWT-001089), 1.5 KV surge (per FCC Part 68), 1,000 VRMS open contacts
- Low power consumption: 56 mW set
- Non-latching and latching versions
- Single coil and dual coil versions
- Stable contact resistance for low level signal switching
- Epoxy sealed for automatic wave soldering and cleaning
- UL E43203; CSA 73363
- All plastics meet UL94 V-0, 30 min. oxygen index

CONTACTS

Arrangement	DPDT (2 Form C) Bifurcated crossbar contacts
Ratings	Non-inductive load: Max. switched power: 60 W or 62.5 VA Max. switched current: 2 A Max. switched voltage: 220 VDC or 250 VAC
Rated Load UL/CSA	0.5 A at 125 VAC res. 2.0 A at 30 VDC res. 0.3 A at 110 VDC res.
Material	Silver alloy; gold clad
Resistance	< 50 milliohms initially at 6 V, 0.1 A

COIL

Power	
At Pickup Voltage (typical)	AZ849: 79 mW to 169 mW AZ849P1: 57 mW to 85 mW AZ849P2: 110 mW to 170 mW
Max. Continuous Dissipation	826 mW at 20°C (68°F) ambient 652 mW at 40°C (104°F) ambient
Temperature Rise	At nominal coil voltage 18°C (32°F) (3 - 12 VDC coils) 25°C (45°F) (18, 24 VDC coils) 34°C (61°F) (48 VDC coils)
Temperature	Max. 115°C (239°F)

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Relay has fixed coil polarity.
4. Specifications subject to change without notice.

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 1 x 10^8 operations at 3 Hz 2 x 10^5 operations at 0.5 A, 125 VAC, resistive 5 x 10^5 operations at 1.0 A, 30 VDC, resistive
Operate Time (typical)	2 ms at nominal coil voltage
Release Time (typical)	1 ms at nominal coil voltage (with no coil suppression)
Bounce (typical)	1 ms (at 10 mA contact current)
Capacitance	< 1.5 pF open and adjacent contacts < 2.0 pF contact to coil
Dielectric Strength (at sea level)	See table
Insulation Resistance	10^9 ohms min. at 500 VDC
Dropout	Greater than 10% of nominal coil voltage
Ambient Temperature **Operating** **Storage**	At nominal coil voltage -40°C (-40°F) to 85°C (185°F) -40°C (-40°F) to 115°C (239°F)
Vibration	Operational, 3.3 mm DA, 10 - 55 Hz Maximum, 5.5 mm DA, 10 -55 Hz
Shock	Operational, 50g min., 11 ms Maximum, 100 g min., 6 ms
Enclosure	LCP
Terminals	Tinned copper alloy, P.C.
Max. Solder Temp.	See charts
Max. Solder Time	See charts
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 seconds
Weight	1.8 grams

RELAY ORDERING DATA

SINGLE SIDE STABLE (Standard, Non-Latching)				
COIL SPECIFICATIONS				ORDER NUMBER
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%	Must Operate VDC	
1.5	3.7	16.1	1.13	AZ849–1
3	7.3	64.3	2.25	AZ849–3
4.5	10.9	145	3.38	AZ849–4
5	12.1	178	3.75	AZ849–5
6	14.6	257	4.5	AZ849–6
9	21.9	579	6.75	AZ849–9
12	29.1	1,028	9.0	AZ849–12
18	36.6	1,620	13.5	AZ849–18
24	48.7	2,880	18.0	AZ849–24
48	79.6	7,680	36.0	AZ849–48

RELAY ORDERING DATA

SINGLE COIL (Latching)				
COIL SPECIFICATIONS				ORDER NUMBER
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%	Set (+)/Reset (-) VDC	
1.5	4.3	22.5	1.13	AZ849P1–1
3	8.6	90	2.25	AZ849P1–3
4.5	12.9	203	3.38	AZ849P1–4
5	14.4	250	3.75	AZ849P1–5
6	17.2	360	4.5	AZ849P1–6
9	25.8	810	6.75	AZ849P1–9
12	34.5	1,440	9.0	AZ849P1–12
18	42.2	2,160	13.5	AZ849P1–18
24	56.3	3,840	18.0	AZ849P1–24

RELAY ORDERING DATA

DUAL COIL (Latching)				
COIL SPECIFICATIONS				ORDER NUMBER
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance (each coil) ± 10%	Set/Reset VDC	
1.5	3.0	11.25	1.13	AZ849P2–1
3	6.1	45	2.25	AZ849P2–3
4.5	9.1	101	3.38	AZ849P2–4
5	10.2	125	3.75	AZ849P2–5
6	12.2	180	4.5	AZ849P2–6
9	25.8	405	6.75	AZ849P2–9
12	24.4	720	9.0	AZ849P2–12
18	29.9	1,080	13.5	AZ849P2–18
24	39.8	1,920	18.0	AZ849P2–24

INITIAL DIELECTRIC AND SURGE STRENGTH (minimum)

		SURGE		
	VRMS, 1 min.	Peak (V)	Rise Time	Decay Time
Between Open Contacts	1000	1500	10 µs	700 µs
Between Contact Sets	1000	1500	10 µs	700 µs
Between Coil and Contacts	AZ849: 1500 AZ849P2: 1000	AZ849, AZ849P1: 2500 (AZ849P2: 1500)	2 µs (10 µs)	10 µs (160 µs)

Decay time measured from beginning of surge.

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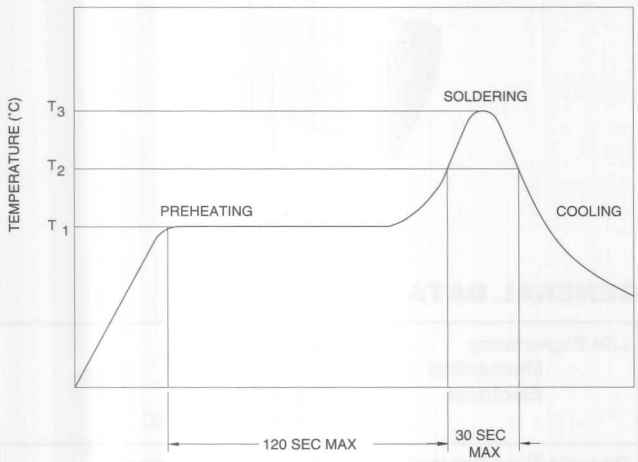
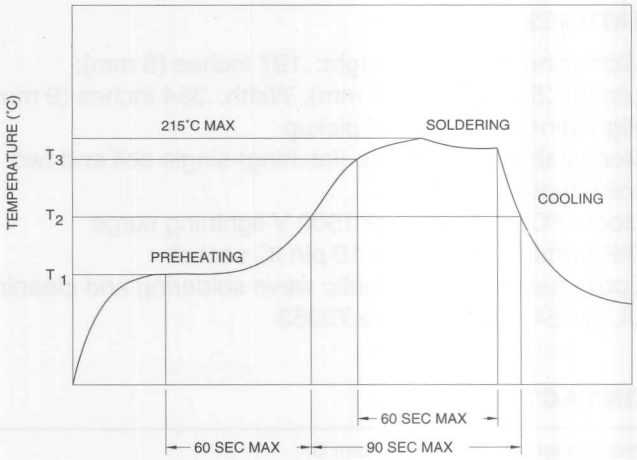
SOLDERING DATA

IRS (Infrared Reflow Soldering)



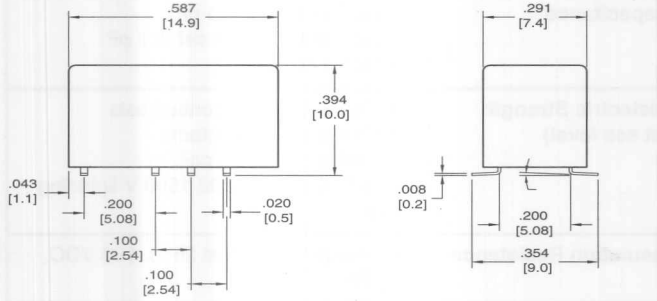
T3= 245 °C MAX
T2= 200 °C MAX
T1= 165 °C MAX

VPS (Vapor Phase Soldering)

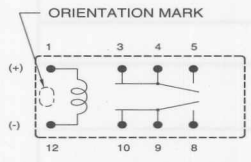


T3= 200 °C MAX
T2= 165 °C MAX
T1= 100 °C MAX

MECHANICAL DATA

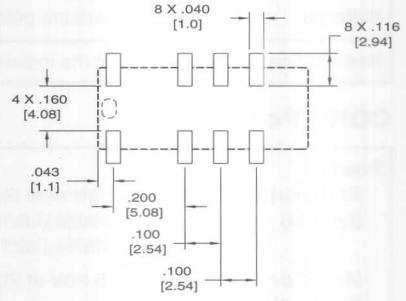


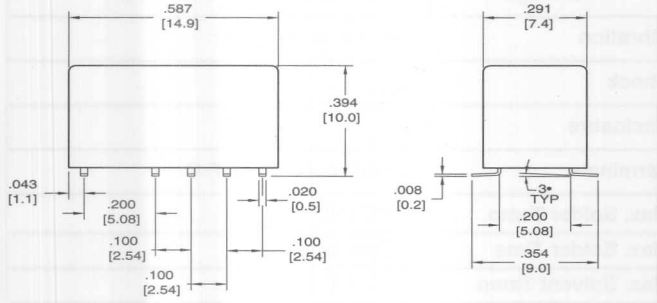
WIRING DIAGRAMS
VIEWED TOWARDS TERMINALS



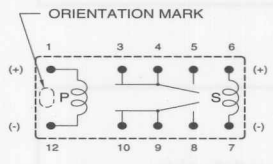
DEENERGIZED OR RESET CONDITION

PC BOARD LAYOUT
VIEWED TOWARDS TERMINALS



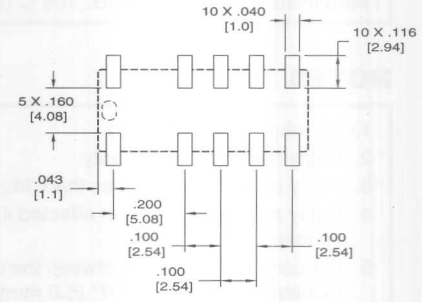


WIRING DIAGRAMS
VIEWED TOWARDS TERMINALS



DEENERGIZED OR RESET CONDITION

PC BOARD LAYOUT
VIEWED TOWARDS TERMINALS



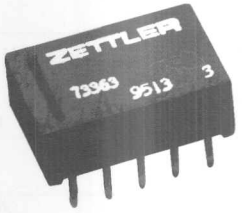
Dimensions in inches with metric equivalents in parentheses. Tolerance: ±0.010"

AZ850

MICROMINIATURE POLARIZED RELAY

FEATURES

- Microminiature size: Height: .197 inches (5 mm); Length: .551 inches (14 mm); Width: .354 inches (9 mm)
- High sensitivity, 79 mW pickup
- Monostable and bistable (latching) single coil and two coil versions available
- Meets FCC Part 68.302 1500 V lightning surge
- DIP terminal layout, fits 10 pin IC socket
- Epoxy sealed for automatic wave soldering and cleaning
- UL file E43203, CSA file 73363



CONTACTS

Arrangement	DPDT (2 Form C) Bifurcated crossbar contacts
Ratings	Resistive load: Max. switched power: 30 W or 62.5 VA Max. switched current: 1 A Max. switched voltage: 220 VDC or 250 VAC Max. carry current: 2 A
Rated Load **UL/CSA**	1 A at 30 VDC 0.5 A at 125 VAC
Material	Silver palladium; gold clad
Resistance	< 50 milliohms initially

COIL (Polarized)

Power	
At Pickup Voltage (typical)	Single side stable: 79–142 mW Bistable (latching) single coil: 56–84 mW Bistable (latching) two coil: 113–169 mW
Max. Continuous Dissipation	875 mW at 20°C (68°F) ambient
Temperature Rise	18°C (32°F) at nominal coil voltage
Temperature	Max. 105°C (221°F)

NOTES

1. All values at 20°C (68°F).
2. Relay has fixed coil polarity.
3. Relay may pull in with less than "Must Operate" value.
4. Relay adjustment may be affected if undue pressure is exerted on relay case.
5. For complete isolation between the relay's magnetic fields, it is recommended that a .197" (5.0 mm) space be provided between adjacent relays.
6. Specifications subject to change without notice.

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 1×10^8 2×10^5 at 1 A, 30 VDC 1×10^5 at 0.5 A, 125VAC
Operate Time (typical)	2 ms at nominal coil voltage
Release Time (typical)	1 ms at nominal coil voltage (with no coil suppression)
Set Time **(bistable versions)**	2 ms at nominal coil voltage (typical)
Reset Time **(bistable versions)**	2 ms at nominal coil voltage (typical)
Dropout	Greater than 10% of nominal coil voltage
Capacitance	Contact to contact: 0.4 pF Contact set to contact set: 0.2 pF Contact to coil: 0.9 pF
Dielectric Strength **(at sea level)**	1000 Vrms between contact sets 1000 Vrms across contacts 1250 Vrms contact to coil Meets FCC part 68.302 1500 V lightning surge
Insulation Resistance	1000 megohms min. at 25°C, 500 VDC, 50% RH
Ambient Temperature **Operating** **Storage**	At nominal coil voltage -40°C (-40°F) to 70°C (158°F) -40°C (-40°F) to 105°C (221°F)
Vibration	.130" DA at 10–55 Hz
Shock	50 g
Enclosure	LCP
Terminals	Tinned copper alloy, P.C.
Max. Solder Temp.	250°C (482°F)
Max. Solder Time	5 seconds
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 seconds
Weight	1.5 grams

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RELAY ORDERING DATA

SINGLE SIDE STABLE

COIL SPECIFICATIONS				ORDER NUMBER
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%	Must Operate VDC	
3	7.5	64.3	2.1	AZ850–3
4.5	11.25	145.2	3.15	AZ850-4.5
5	12.5	178	3.5	AZ850–5
6	15.0	257	4.2	AZ850–6
9	22.5	579	6.3	AZ850–9
12	30.0	1,028	8.4	AZ850–12
24	48.0	2,880	16.8	AZ850–24

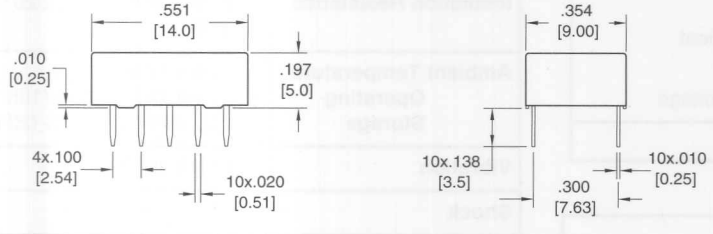
BISTABLE (LATCHING) SINGLE COIL

COIL SPECIFICATIONS				ORDER NUMBER
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%	Must Operate VDC	
3	8.7	90	3	AZ850P1–3
5	14.5	250	3.5	AZ850P1–5
6	17.4	360	4.2	AZ850P1–6
9	26.1	810	6.3	AZ850P1–9
12	34.8	1440	8.4	AZ850P1–12
24	57.6	3840	16.8	AZ850P1–24

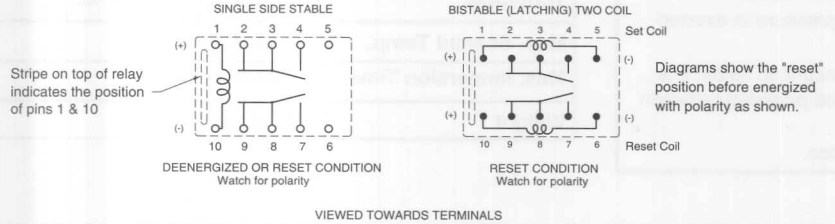
BISTABLE (LATCHING) TWO COIL

COIL SPECIFICATIONS					ORDER NUMBER
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%		Must Operate VDC	
		Coil I	Coil II		
3	6	45	45	3	AZ850P2–3
5	10	125	125	3.5	AZ850P2–5
6	12	180	180	4.2	AZ850P2–6
9	18	405	405	6.3	AZ850P2–9
12	24	720	720	8.4	AZ850P2–12
24	40	1,920	1,920	16.8	AZ850P2–24

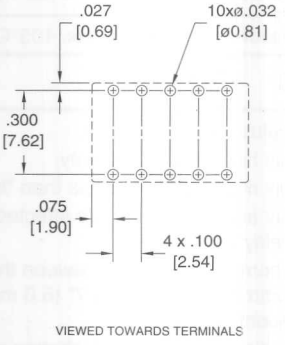
MECHANICAL DATA



WIRING DIAGRAMS



PC BOARD LAYOUT



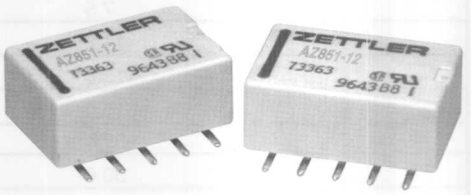
Dimensions in inches with metric equivalents in parentheses. Tolerance: ±0.010"

AZ851

MICROMINIATURE POLARIZED RELAY

FEATURES

- Microminiature size: Height: .244 inches (6.2 mm); Length: .559 inches (14.2 mm); Width: .366 inches (9.3 mm)
- High sensitivity, 79 mW pickup
- Meets FCC Part 68.302 1500 V lightning surge
- Surface mount type with "L" shaped terminals
- Epoxy sealed for automatic wave soldering and cleaning
- UL file E43203, CSA file 73363 (pending)



CONTACTS

Arrangement	DPDT (2 Form C) Bifurcated crossbar contacts
Ratings	Resistive load: Max. switched power: 30 W or 62.5 VA Max. switched current: 1 A Max. switched voltage: 220 VDC or 250 VAC Max. carry current: 2 A
Rated Load UL/CSA	1 A at 30 VDC 0.5 A at 125 VAC
Material	Silver palladium; gold clad
Resistance	< 50 milliohms initially

COIL (Polarized)

Power	
At Pickup Voltage (typical)	79–142 mW
Max. Continuous Dissipation	875 mW at 20°C (68°F) ambient
Temperature Rise	18°C (32°F) at nominal coil voltage
Temperature	Max. 105°C (221°F)

NOTES

1. All values at 20°C (68°F).
2. Relay has fixed coil polarity.
3. Relay may pull in with less than "Must Operate" value.
4. Relay adjustment may be affected if undue pressure is exerted on relay case.
5. For complete isolation between the relay's magnetic fields, it is recommended that a .197" (5.0 mm) space be provided between adjacent relays.
6. Specifications subject to change without notice.

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 1×10^8 2×10^5 at 1 A, 30 VDC 1×10^5 at 0.5 A, 125VAC
Operate Time (typical)	2 ms at nominal coil voltage
Release Time (typical)	1 ms at nominal coil voltage (with no coil suppression)
Dropout	Greater than 10% of nominal coil voltage
Capacitance	Contact to contact: 0.4 pF Contact set to contact set: 0.2 pF Contact to coil: 0.9 pF
Dielectric Strength (at sea level)	1000 Vrms between contact sets 1000 Vrms across contacts 1250 Vrms contact to coil Meets FCC part 68.302 1500 V lightning surge
Insulation Resistance	1000 megohms min. at 25°C, 500 VDC, 50% RH
Ambient Temperature **Operating** **Storage**	At nominal coil voltage -40°C (-40°F) to 85°C (185°F) -40°C (-40°F) to 105°C (221°F)
Vibration	.130" DA at 10–55 Hz
Shock	50 g
Enclosure	LCP
Terminals	Tinned copper alloy, P.C.
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 seconds
Weight	1.5 grams

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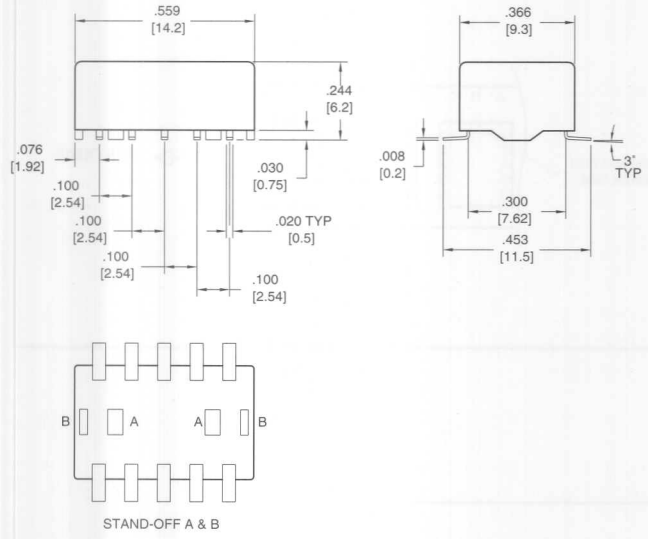
RELAY ORDERING DATA

STANDARD COIL				
COIL SPECIFICATIONS				ORDER NUMBER
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%	Must Operate VDC	
3	7.5	64.3	2.25	AZ851–3
5	12.5	178	3.75	AZ851–5
6	15.0	257	4.5	AZ851–6
9	22.5	579	6.75	AZ851–9
12	30.0	1,028	9.0	AZ851–12
24	48.0	2,880	18.0	AZ851–24

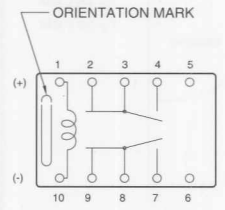
MECHANICAL DATA



STAND-OFF A & B

WIRING DIAGRAMS

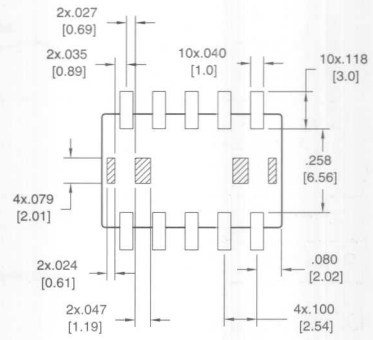
VIEWED TOWARDS TERMINALS



DEENERGIZED OR RESET CONDITION

PC BOARD LAYOUT

VIEWED TOWARDS TERMINALS



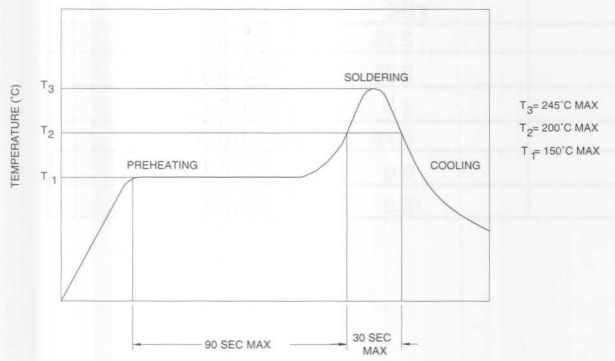
SOLDERING PADS FOR TERMINALS

TEMPORARY GLUE PADS FOR STAND-OFFS A OR B

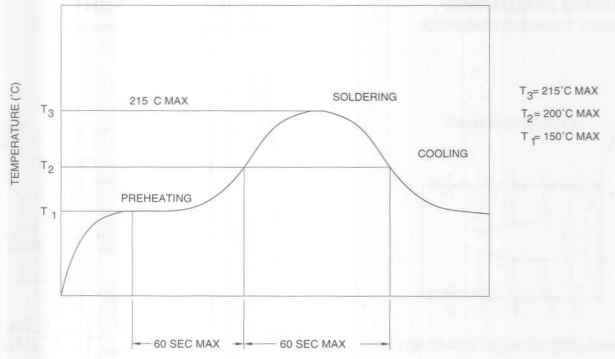
Dimensions in inches with metric equivalents in parentheses. Tolerance: ± .010"

Soldering Data

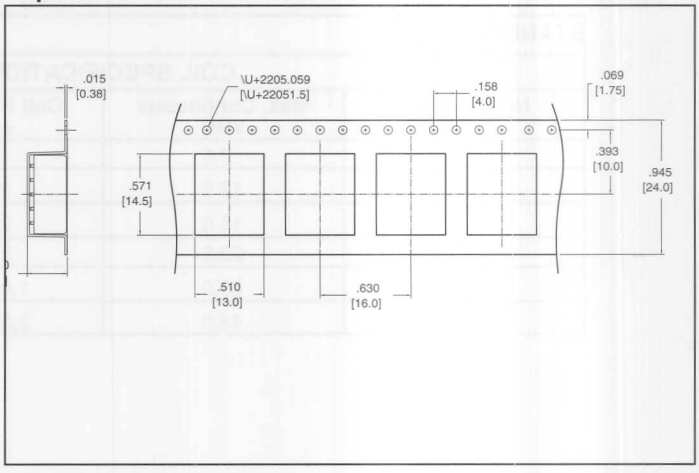
IRS (Infrared Reflow Soldering)



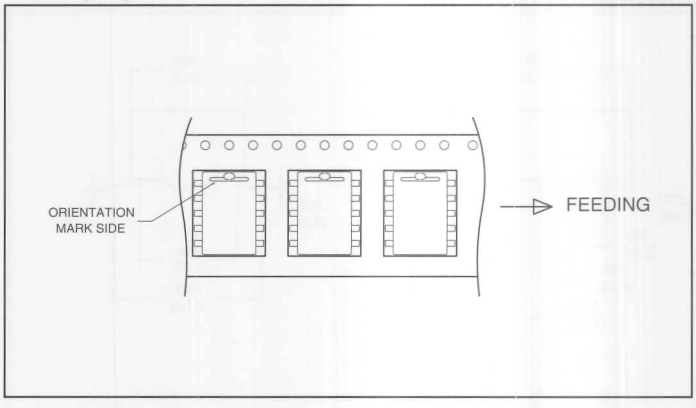
VPS (Vapor Phase Soldering)



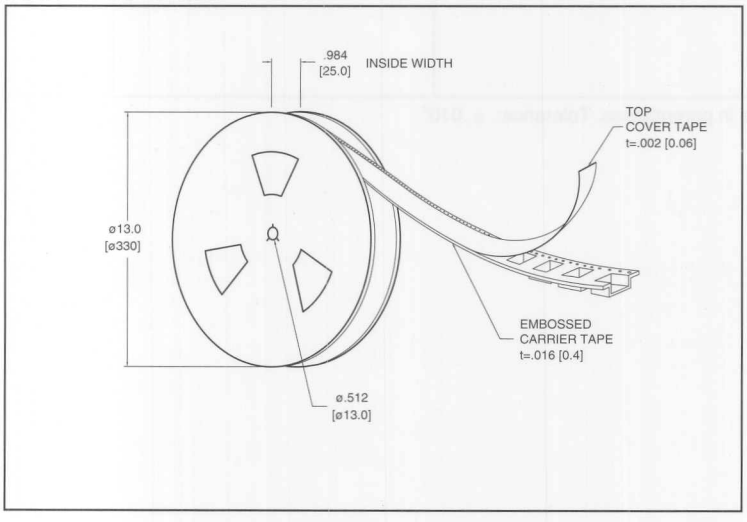
Tape Dimensions



Packaging



Reel Dimensions



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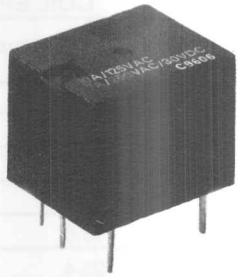
15 AMP MINIATURE PC BOARD RELAY

FEATURES

- High performance
- Low seated height
- Flux tight and sealed versions available
- UL, CUR file E43203



CONTACTS

Arrangement	SPST (1 Form A) SPDT (1 Form C)
Ratings	Form A and C Max. switched power: 210 W or 2400 VA Max. switched current: 15 A AC, 7 A DC Max. switched voltage: 30 VDC or 300 VAC
Rated Load UL/CUR	1 Form A 15 A at 120 VAC TV - 5 120 VAC 1 Form C 10 A at 120 VAC 100,000 cycles N.O. 10 A at 120 VAC 50,000 cycles N.C.

COIL

Power	
At Pickup Voltage Max Continuous Dissipation	203 mW .6 W at 20°C (68°F)
Temperature Rise (at nominal coil voltage)	27°C (49°F)
Temperature	Max. 105°C (221°F)

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Unsealed relays should not be dip cleaned.
4. Specifications subject to change without notice.

GENERAL DATA

Life Expectancy	
Mechanical	$1x10^6$
Electrical	1×10^5 at rated load
Operate Time	10 ms max.
Release Time	5 ms max. (with no coil suppression)
Dielectric Strength (at sea level for 1 min.)	1500 Vrms contact to coil 1000 Vrms across contacts
Insulation Resistance	100 megohms min. at 500 VDC, 50% RH
Dropout	Greater than 10% of nominal coil voltage
Ambient Temperature	At nominal coil voltage
Operating	-40°C(-40°F) to 70°C(158°F)
Storage	-40°C(-40°F) to 105°C(221°F)
Vibration	0.062" DA at 10–55 Hz
Shock	10 g
Enclosure	P.B.T. polyester
Terminals	Tinned copper alloy, P.C.
Max. Solder Temp.	270°C (500°F)
Max. Solder Time	5 seconds
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 seconds
Weight	10 g

AZ932

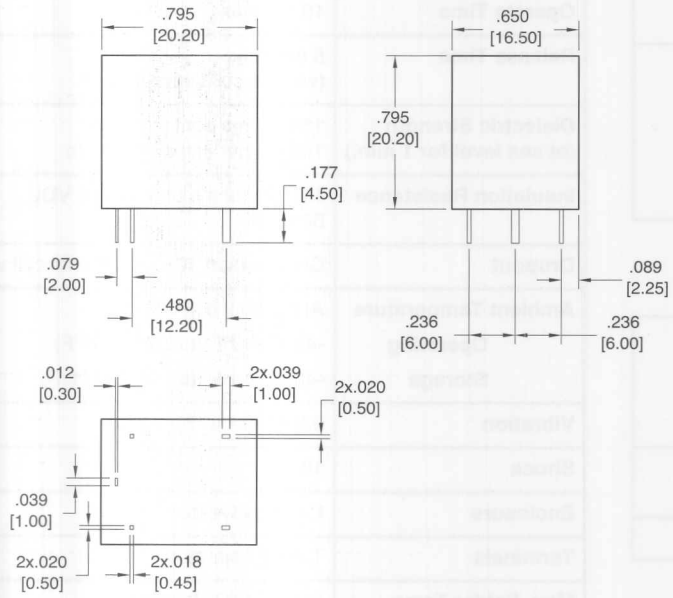
RELAY ORDERING DATA

STANDARD RELAYS					
COIL SPECIFICATIONS				ORDER NUMBER*	
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance	Must Operate VDC	1 Form A (SPST-N.O.)	1 Form C (SPDT)
3	3.9	25 ±10%	2.3	AZ932-1AH-3D	AZ932-1CH-3D
5	6.5	70 ±10%	3.8	AZ932–1AH–5D	AZ932–1CH–5D
6	7.8	100 ±10%	4.5	AZ932–1AH–6D	AZ932–1CH–6D
9	11.7	225 ±10%	6.8	AZ932–1AH–9D	AZ932–1CH–9D
12	15.6	400 ±10%	9.0	AZ932–1AH–12D	AZ932–1CH–12D
18	23.4	900 ±10%	13.5	AZ932-1AH-18D	AZ932-1CH-18D
24	31.2	1,600 ±15%	18.0	AZ932–1AH–24D	AZ932–1CH–24D
48	62.4	4,500 ±15%	36.0	AZ932–1AH–48D	AZ932–1CH–48D

*Add suffix "E" for epoxy sealed version.

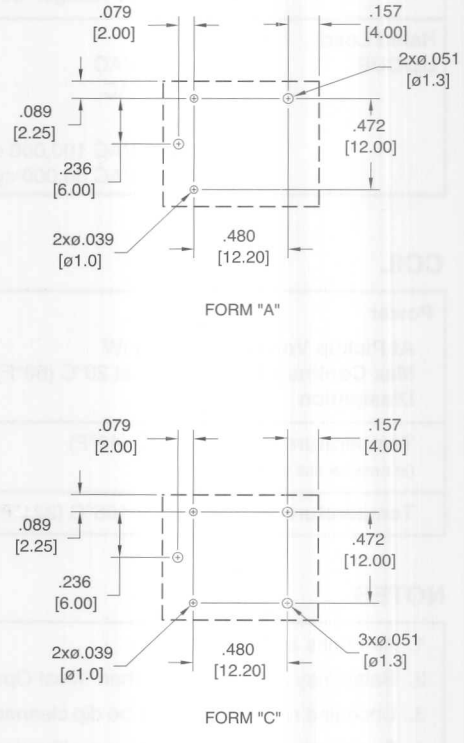
MECHANICAL DATA

Outline Dimensions



Wiring Diagram

PC Board Layout



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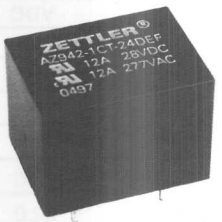
16 AMP MINIATURE PC BOARD RELAY



FEATURES

- Extremely low cost
- High switching capacity — 16 Amps
- DC coils to 48 VDC
- UL and Canadian approval (E44211); VDE 6820 ⑤
- Class B insulation for high temperature operation
- Class F insulation available

CONTACTS

Arrangement	SPST (1 Form A) SPDT (1 Form C)
Ratings	Resistive load
Medium Duty	Max. switched power: 150 W or 2770 VA Max. switched current: 10 A Max. switched voltage: 30 VDC or 300 VAC **UL Rating**: 5 A at 30 VDC 10 A at 277 VAC 1/3 HP at 125 VAC (1 Form A) 2.9 A 125 VAC pilot duty (1 Form A)
Heavy Duty	Max. switched power: 480 W or 4000 VA Max. switched current: 16 A Max. switched voltage: 30 VDC or 300 VAC **UL Rating:** 12 A at 28 VDC 12 A at 277 VAC 16A at 250 VAC ⑥ 2.0 A at 240 VAC pilot duty
Material	Silver alloy
Resistance	<100 milliohms initially (24 V, 1 A voltage drop method)

COIL

Power	
At Pickup Voltage (typical)	230 mW
Max Continuous Dissipation	Class B: 1.7 W at 20°C (68°F) ambient Class F: 2.2 W at 20°C (68°F) ambient
Temperature Rise	25°C (45°F) at nominal coil voltage
Temperature	Class B: Max. 130°C (266°F) Class F: Max. 155°C (311°F)

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations $1x10^7$ 1×10^5 at 10A, 277 VAC
Operate Time (typical)	10 ms at nominal coil voltage
Release Time (typical)	5 ms at nominal coil voltage (with no coil suppression)
Dielectric Strength (at sea level for 1 min.)	1750 Vrms contact to coil 1000 Vrms across contacts
Insulation Resistance	100 megohms min. at 20°C, 500 VDC, 50% RH
Dropout	Greater than 10% of nominal coil voltage
Ambient Temperature	At nominal coil voltage
Operating	Class B: -40°C(-40°F) to 105°C(221°F) Class F: -40°C(-40°F) to 130°C(266°F)
Storage	Class B: -55°C(-67°F) to 130°C(266°F) Class F: -55°C(-67°F) to 155°C(311°F)
Vibration	0.062" DA at 10–55Hz
Shock	10 g
Enclosure	P.B.T. polyester
Terminals	Tinned copper alloy, P.C.
Max. Solder Temp.	270°C (518°F)
Max. Solder Time	5 seconds
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 seconds
Weight	13 g

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Unsealed relays should not be dip cleaned.
4. Specifications subject to change without notice.

⑤ Only AZ942-1CT unsealed version is VDE approved at 5 A, 250 VAC.

⑥ 6000 operations.

AZ942

RELAY ORDERING DATA

STANDARD RELAYS: Medium Duty Type (10 Amp Contact)					
COIL SPECIFICATIONS				ORDER NUMBER*	
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ±10%	Must Operate VDC	Unsealed	Sealed
3	6.5	25	2.4	AZ942–1CH–3D	AZ942–1CH–3DE
5	11.0	70	4.0	AZ942–1CH–5D	AZ942–1CH–5DE
6	13.0	100	4.8	AZ942–1CH–6D	AZ942–1CH–6DE
9	20.0	225	7.2	AZ942–1CH–9D	AZ942–1CH–9DE
12	26.0	400	9.6	AZ942–1CH–12D	AZ942–1CH–12DE
24	52.0	1,600	19.2	AZ942–1CH–24D	AZ942–1CH–24DE
48	104.0	6,200	38.4	AZ942–1CH–48D	AZ942–1CH–48DE

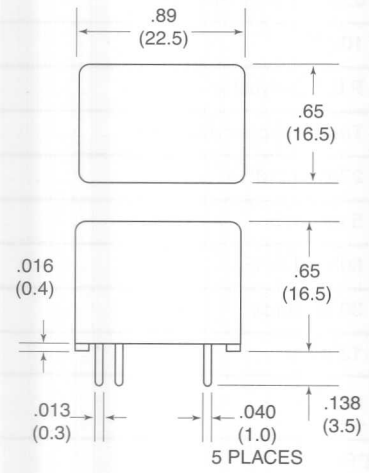
*Substitute "1AT" in place of "1CH" to indicate 1 Form A contact. To indicate Class F version, add suffix "F."

RELAY ORDERING DATA

STANDARD RELAYS: Heavy Duty Type (16 Amp Contact)					
COIL SPECIFICATIONS				ORDER NUMBER*	
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ±10%	Must Operate VDC	Unsealed	Sealed
3	6.5	25	2.4	AZ942–1CT–3D	AZ942–1CT–3DE
5	11.0	70	4.0	AZ942–1CT–5D	AZ942–1CT–5DE
6	13.0	100	4.8	AZ942–1CT–6D	AZ942–1CT–6DE
9	20.0	225	7.2	AZ942–1CT–9D	AZ942–1CT–9DE
12	26.0	400	9.6	AZ942–1CT–12D	AZ942–1CT–12DE
24	52.0	1,600	19.2	AZ942–1CT–24D	AZ942–1CT–24DE
48	104.0	6,200	38.4	AZ942–1CT–48D	AZ942–1CT–48DE

*Substitute "1AW" in place of "1CT" to indicate 1 Form A contact. To indicate Class F version, add suffix "F."

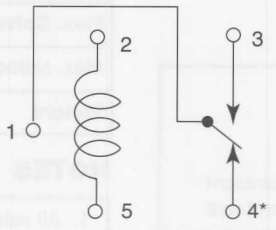
MECHANICAL DATA



TERMINAL DIMENSIONS

Terminal Number	Dimensions
1	.013 X .040
2, 5	.013 X .036
3, 4	.013 X .040

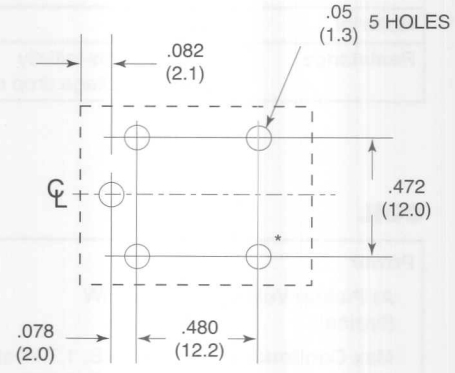
WIRING DIAGRAM



Viewed toward terminals

*Not used on Form A relay

PC BOARD LAYOUT



Viewed toward terminals

*Not used on Form A relay

Dimensions in inches with metric equivalents in parentheses. Tolerance: ±0.010"

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20 AMP MINIATURE AUTOMOTIVE PC BOARD RELAY

FEATURES

- Extremely low cost
- High switching capacity — 20 Amps
- DC coils to 24 VDC
- Class F insulation for high temperature operation

CONTACTS

Arrangement	SPST (1 Form A) SPDT (1 Form C)
Ratings **Medium Duty**	Resistive load Max. switched power: 280 W or 5000 VA Max. switched current: 20 A Max. switched voltage: 30 VDC or 250 VAC
Material	Silver alloy
Resistance	<100 milliohms initially (24 V, 1 A voltage drop method)

COIL

Power	
At Pickup Voltage (typical)	220 mW
Max Continuous Dissipation	2.0 W at 20°C (68°F) ambient 1.8 W at 40°C (104°F) ambient
Temperature Rise	50°C (90°F) at nominal coil voltage
Temperature	Max. 155°C (311°F)

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Unsealed relays should not be dip cleaned.
4. Specifications subject to change without notice.

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations $1x10^7$ 1×10^5 at rated load
Operate Time (typical)	10 ms at nominal coil voltage
Release Time (typical)	5 ms at nominal coil voltage (with no coil suppression)
Dielectric Strength (at sea level for 1 min.)	1500 Vrms contact to coil 1000 Vrms across contacts
Insulation Resistance	100 megohms min. at 20°C, 500 VDC, 50% RH
Dropout	Greater than 10% of nominal coil voltage
Ambient Temperature **Operating** **Storage**	At nominal coil voltage -40°C(-40°F) to 105°C(221°F) -55°C(-67°F) to 155°C(311°F)
Vibration	0.062" DA at 10–55Hz
Shock	10 g operational, 100 g damage
Enclosure	P.B.T. polyester
Terminals	Tinned copper alloy, P.C.
Max. Solder Temp.	270°C (518°F)
Max. Solder Time	5 seconds
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 seconds
Weight	12 g

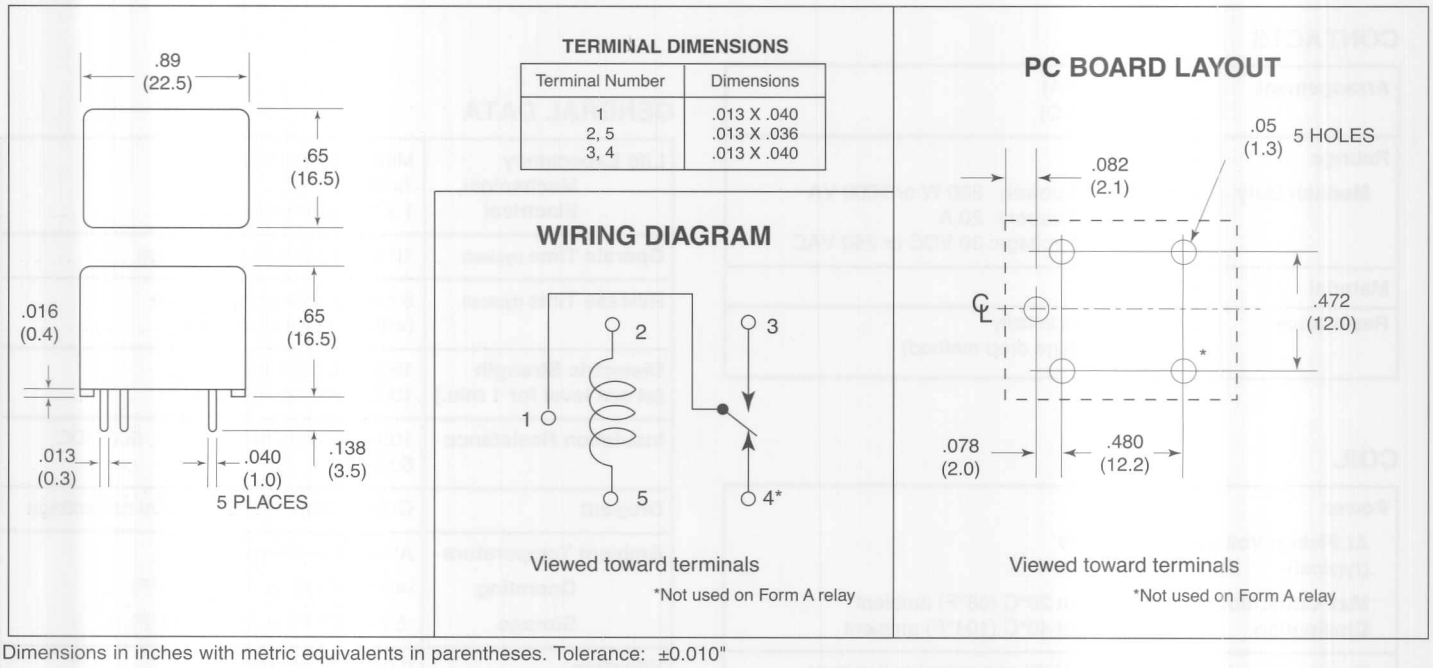
AZ942A

RELAY ORDERING DATA

STANDARD RELAYS					
COIL SPECIFICATIONS				ORDER NUMBER*	
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ±10%	Must Operate VDC	Unsealed	Sealed
6	9.5	45	3.2	AZ942A–1CT–6D	AZ942A–1CT–6DE
12	19.0	180	6.3	AZ942A–1CT–12D	AZ942A–1CT–12DE
24	37.9	720	12.6	AZ942A–1CT–24D	AZ942A–1CT–24DE

*Substitute "1AT" in place of "1CT" to indicate 1 Form A contact.

MECHANICAL DATA



Dimensions in inches with metric equivalents in parentheses. Tolerance: ±0.010"

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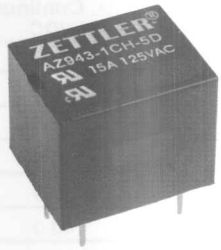
15 AMP MINIATURE PC BOARD RELAY

FEATURES

- High performance
- Low seated height
- Flux tight and sealed versions available
- UL, CUR file E43203
- Class B insulation (130°C) standard



CONTACTS

Arrangement	SPST (1 Form A) SPDT (1 Form C)
Ratings	Form A and C Max. switched power: 210 W or 2770 VA Max. switched current: 15 A AC, 7 A DC Max. switched voltage: 30 VDC or 300 VAC
UL/CUR Ratings	1 Form A 15 A at 125 VAC, general use 10A at 277 VAC, general use, 100,000 cycles TV - 5 120 VAC 1 Form C 10 A at 277 VAC, general use, 100,000 cycles
Material	$AgSnO_2$
Resistance	< 100 milliohms initially (24 V, 1 A method)

COIL

Power	
At Pickup Voltage Max Continuous Dissipation	203 mW 1.0 W at 20°C (68°F)
Temperature Rise (at nominal coil voltage)	27°C (49°F)
Temperature	Max. 130°C (266°F)

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Unsealed relays should not be dip cleaned.
4. Specifications subject to change without notice.

GENERAL DATA

Life Expectancy	
Mechanical	1 x 10^6
Electrical	1 x 10^5 at rated load
Operate Time	10 ms max.
Release Time	5 ms max. (with no coil suppression)
Dielectric Strength (at sea level for 1 min.)	1500 Vrms contact to coil 1000 Vrms across contacts
Insulation Resistance	100 megohms min. at 500 VDC, 50% RH
Dropout	Greater than 10% of nominal coil voltage
Ambient Temperature	At nominal coil voltage
Operating	-40°C(-40°F) to 95°C(203°F)
Storage	-40°C(-40°F) to 130°C(266°F)
Vibration	0.062" DA at 10–55 Hz
Shock	10 g
Enclosure	P.B.T. polyester
Terminals	Tinned copper alloy, P.C.
Max. Solder Temp.	270°C (518°F)
Max. Solder Time	5 seconds
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 seconds
Weight	10 g

AZ943

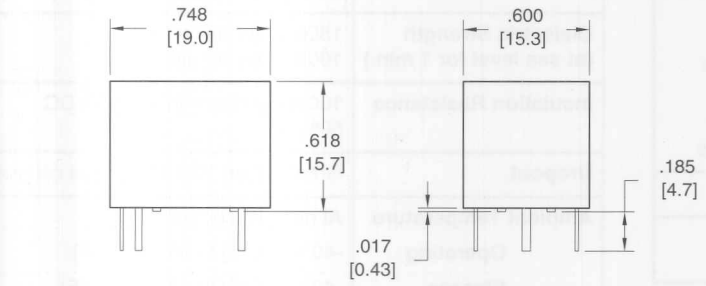
RELAY ORDERING DATA

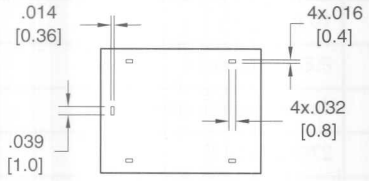
STANDARD RELAYS					
COIL SPECIFICATIONS				ORDER NUMBER	
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ±10%	Must Operate VDC	Unsealed	Sealed
5	8.3	70	3.8	AZ943–1CH–5D	AZ943–1CH–5DE
6	10.0	100	4.5	AZ943–1CH–6D	AZ943–1CH–6DE
9	15.0	225	6.8	AZ943–1CH–9D	AZ943–1CH–9DE
12	20.0	400	9.0	AZ943–1CH–12D	AZ943–1CH–12DE
18	30.0	900	13.5	AZ943-1CH-18D	AZ943-1CH-18DE
24	40.0	1,600	18.0	AZ943–1CH–24D	AZ943–1CH–24DE
48	67.0	4,500	36.0	AZ943–1CH–48D	AZ943–1CH–48DE

Substitute "1AH" in place of "1CH" to indicate 1 Form A contact.

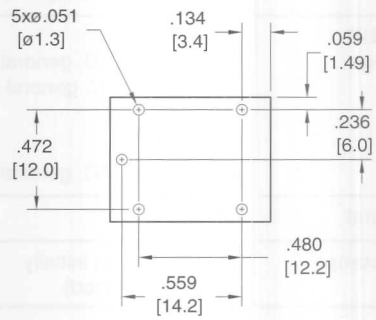
MECHANICAL DATA

Outline Dimensions



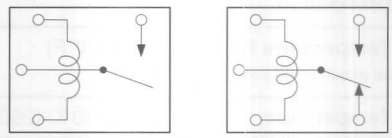


PC Board Layout



VIEWED TOWARD TERMINALS

Wiring Diagram



FORM "A" FORM "C"

VIEWED TOWARD TERMINALS

Dimensions in inches with metric equivalents in parentheses. Tolerance: ± .010"

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16 AMP LOW PROFILE POWER RELAY

FEATURES

- High power switching (2000 VA)
- High sensitivity, 128 mW pickup
- Low profile (less than .5" height)
- SPST (1 Form A), SPDT (1 Form C)
- DC coils up to 100 VDC
- UL, CUR file E44211

CONTACTS

Arrangement	SPST (1 Form A) SPDT (1 Form C)
Ratings	**Resistive load:** Max. switched power: 300 W, 2000 VA (SPST) 150 W, 1250 VA (SPDT) Max. switched current: 16 A (SPST), 10 A (SPDT) Max. switched voltage: 250 VAC/125 VDC
Rated Load **UL, CUR** **SPST**	16 A at 125 VAC, resistive 8 A at 250 VAC, resistive 10 A at 30 VDC, resistive 1/4 HP 125 VAC 1/10 HP 277 VAC
SPDT	10 A at 125 VAC, resistive 5 A at 277 VAC, 30 VDC, resistive 1/10 HP 277 VAC
Min. Load	5 VDC, 0.1 A
Material	Silver alloy
Resistance	< 50 milliohms initially (24 V, 1 A voltage drop method)

COIL

Power	
At Pickup Voltage (typical)	Form A: 128 mW Form C: 256 mW
Max. Continuous Dissipation	1.8 W at 20°C (68°F) 1.3 W at 40°C (104°F)
Temperature Rise	Form A: 16°C (29°F) at nominal coil voltage Form C: 28°C (50°F) at nominal coil voltage
Temperature	Max. 115°C (239°F)

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 1 x 10^7 1 x 10^5 at rated load
Operate Time (typical)	10 ms at nominal coil voltage
Release Time (typical)	4 ms at nominal coil voltage (with no coil suppression)
Dielectric Strength (at sea level for 1 min.)	1500 Vrms coil to contact 1000 Vrms contact to contact
Insulation Resistance	100 megohms min. at 20°C, 500 VDC, 50% RH
Dropout	Greater than 5% of nominal coil voltage
Ambient Temperature **Operating**	At nominal coil voltage -40°C (-40°F) to 80°C (176°F)
Vibration	0.062" DA at 10–55 Hz
Shock	10 g
Enclosure	P.B.T. polyester
Terminals	Tinned copper alloy, P.C.
Max. Solder Temp.	270°C (518°F)
Max. Solder Time	5 seconds
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 seconds
Weight	8 grams

NOTES

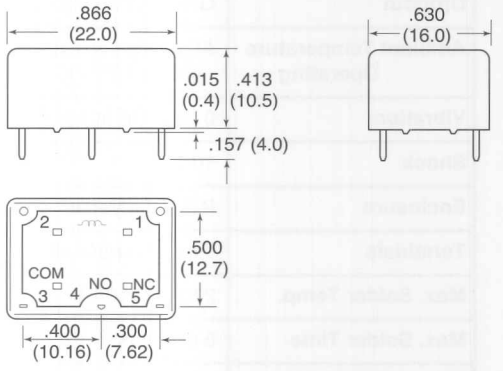
1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Specifications subject to change without notice.

AZ944

RELAY ORDERING DATA

COIL SPECIFICATIONS SPST-NO (1 Form A)				ORDER NUMBER	
Nominal Coil VDC	Must Operate VDC	Max. Continuous VDC	Coil Resistance ±10%	Unsealed	Sealed
5	4.0	15.0	125	AZ944–1AH–5D	AZ944–1AH–5DE
6	4.8	18.0	180	AZ944–1AH–6D	AZ944–1AH–6DE
9	7.2	27.0	405	AZ944–1AH–9D	AZ944–1AH–9DE
12	9.6	36.0	720	AZ944–1AH–12D	AZ944–1AH–12DE
18	14.4	54.0	1620	AZ944–1AH–18D	AZ944–1AH–18DE
24	19.2	72.0	2,880	AZ944–1AH–24D	AZ944–1AH–24DE
48	38.4	144.0	11,520	AZ944–1AH–48D	AZ944–1AH–48DE
100	80.0	173.0	16,600	AZ944–1AH–100D	AZ944–1AH–100DE
COIL SPECIFICATIONS SPDT-NO (1 Form C)				**ORDER NUMBER**	
Nominal Coil VDC	Must Operate VDC	Max. Continuous VDC	Coil Resistance ±10%	Unsealed	Sealed
5	4.0	10.6	62.5	AZ944–1C–5D	AZ944–1C–5DE
6	4.8	12.7	90	AZ944–1C–6D	AZ944–1C–6DE
9	7.2	19.1	202	AZ944–1C–9D	AZ944–1C–9DE
12	9.6	25.5	360	AZ944–1C–12D	AZ944–1C–12DE
18	14.4	38.2	810	AZ944–1C–18D	AZ944–1C–18DE
24	19.2	50.9	1,440	AZ944–1C–24D	AZ944–1C–24DE
48	38.4	101.8	5,760	AZ944–1C–48D	AZ944–1C–48DE
100	80.0	173.0	16,600	AZ944–1C–100D	AZ944–1C–100DE

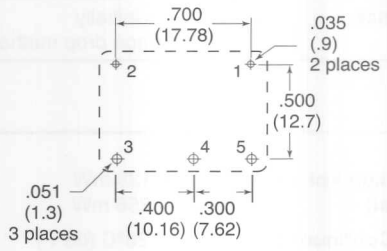
MECHANICAL DATA



WIRING DIAGRAM

Viewed toward terminals

PC BOARD LAYOUT



Hole 5 not needed for SPST-NO model

Viewed toward terminals

Dimensions in inches with metric equivalents in parentheses. Tolerance: ±0.010"

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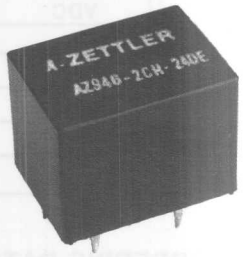
MINIATURE PC BOARD RELAY



FEATURES

- Subminiature size
- High sensitivity, 288 mW pick up
- Coils to 24 VDC
- Epoxy sealed for automatic wave soldering
- Contacts rated at 1 or 5 Amps
- Life expectancy to 20 million operations
- Extremely low cost
- UL, CUR file E43203

CONTACTS

Arrangement	2 Form C (DPDT)
Max. Ratings	Noninductive load:
Light Duty	Max. switched power: 30 W or 277 VA Max. switched current: 1 A Max. switched voltage: 150* VDC or 300 VAC **UL Rating:** 1 A at 30 VDC resistive 1 A at 277 VAC general use (100k cycles)
Medium Duty	Max. switched power: 150 W or 1385 VA Max. switched current: 5 A Max. switched voltage: 150* VDC or 300 VAC **UL Rating:** 5 A at 30 VDC resistive 5 A at 277 VAC general use (100k cycles) * If switching voltage is greater than 30 VDC special precautions must be taken. Please contact the factory
Material	Light Duty: Silver Medium Duty: Silver Cadmium Oxide
Resistance	Light Duty: 100 milliohms max. initially Medium Duty: 100 milliohms max. (6 V 1 A method)

COIL

Power	
At Pickup Voltage (typical)	288 mW
Max. Continuous Dissipation	0.55 W at 20°C (68°F)
Temperature Rise	45°C (81°F)
Max. Temperature	105°C (221°F)

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 2×10^7 1×10^5 (at rated load)
Operate Time (typical)	5 ms at nominal coil voltage
Release Time (typical)	5 ms at nominal coil voltage (with no coil suppression)
Dielectric Strength (at sea level for 1 min.)	1000 Vrms coil to contact 750 Vrms between open contacts 1000 Vrms contact set to contact set
Insulation Resistance	100 megohms min. at 20°C, 500 VDC, 50% RH
Dropout	Greater than 10% of nominal coil voltage
Ambient Temperature **Operating** **Storage**	At nominal coil voltage -10°C (14°F) to 60°C (140°F) -10°C (14°F) to 105°C (221°F)
Vibration	0.062" DA at 5–55 Hz
Shock	10 g
Enclosure	P.B.T. polyester
Terminals	Tinned copper alloy, P.C.
Max. Solder Temp.	270°C (518°F)
Max. Solder Time	5 seconds
Max.Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 seconds
Weight	12 grams

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Specifications subject to change without notice.
4. Unsealed relays should not be dipped cleaned

AZ946

RELAY ORDERING DATA

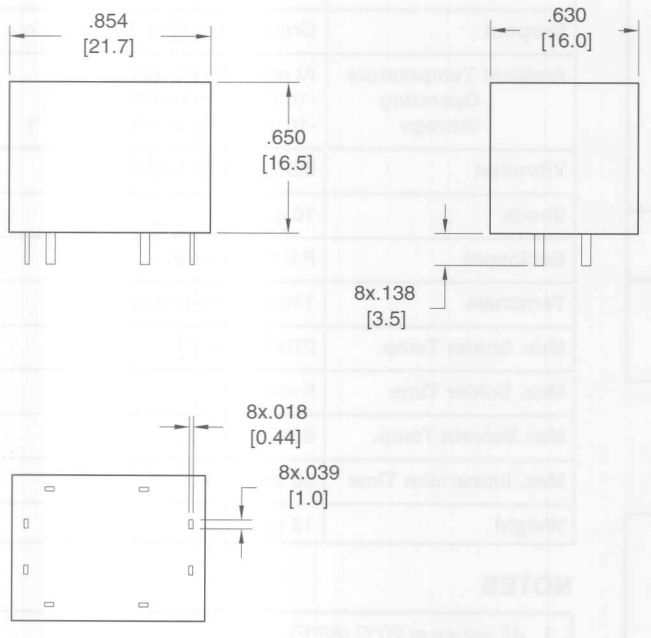
COIL SPECIFICATIONS - Medium Duty (5 Amp Contact)					
Nominal Coil VDC	Must Operate VDC	Max. Continuous VDC	Coil Resistance ±10%	ORDER NUMBER	
				Unsealed	Sealed
3	2.4	3.3	15	AZ946–2CH–3D	AZ946–2CH–3DE
6	4.8	6.6	60	AZ946–2CH–6D	AZ946–2CH–6DE
9	7.2	9.9	135	AZ946–2CH–9D	AZ946–2CH–9DE
12	9.6	26.4	240	AZ946–2CH–12D	AZ946–2CH–12DE
24	19.2	31.2	960	AZ946–2CH–24D	AZ946–2CH–24DE

RELAY ORDERING DATA

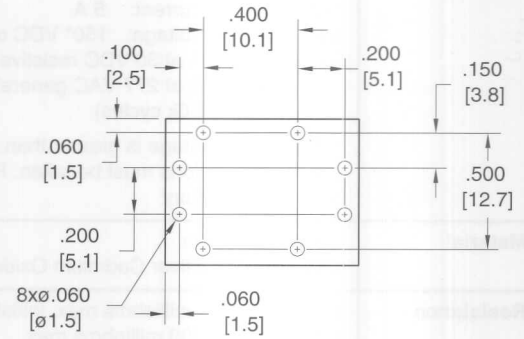
COIL SPECIFICATIONS - Light Duty (1 Amp Contact)					
Nominal Coil VDC	Must Operate VDC	Max. Continuous VDC	Coil Resistance ±10%	ORDER NUMBER	
				Unsealed	Sealed
3	2.4	3.3	20	AZ946–2C–3DS	AZ946–2C–3DSE
6	4.8	6.6	80	AZ946–2C–6DS	AZ946–2C–6DSE
9	7.2	9.9	180	AZ946–2C–9DS	AZ946–2C–9DSE
12	9.6	26.4	320	AZ946–2C–12DS	AZ946–2C–12DSE
24	19.2	31.2	1280	AZ946–2C–24DS	AZ946–2C–24DSE

MECHANICAL DATA

Outline Dimensions

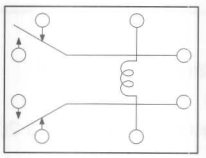


PC Board Layout



VIEWED TOWARD TERMINALS

Wiring Diagram



VIEWED TOWARD TERMINALS

Dimensions in inches with metric equivalents in parentheses. Tolerance: ± .010"

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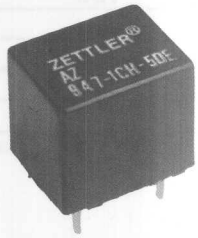
20 AMP SUBMINIATURE PCB POWER RELAY FOR AUTOMOTIVE USE



FEATURES

- 0.3 mm contact gap
- 20 Amp contact rating
- Low profile, small footprint
- High operating temperature (85°C)
- SPST (1 Form A), SPDT (1 Form C)

CONTACTS

Arrangement	SPST (1 Form A) SPDT (1 Form C)
Ratings	Resistive load: Max. switched power: 280 W Max. switched voltage: 50 VDC Max. carry current: 25 A 20 A at 14 VDC motor (make) 6 A at 14 VDC motor (break)
Minimum Load	5 VDC, 0.1 A
Material	Silver nickel or silver tin oxide
Resistance	< 50 milliohms initially (6V, 1 A voltage drop method)

COIL

Power	
At Pickup Voltage (typical)	222 mW
Max. Continuous Dissipation	1.09 W at 20°C (68°F) ambient
Temperature Rise	at nominal coil voltage 44°C (79°F)
Max Temperature	105°C (221°F)

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Specifications subject to change without notice.

GENERAL DATA

Life Expectancy	Minimum operations
Mechanical	1 x 10^6
Electrical	1 x 10^5 at rated load
Operate Time (max.)	10 ms max. at nominal coil voltage
Release Time (max.)	5 ms max. at nominal coil voltage (with no coil suppression)
Dielectric Strength (at sea level for 1 min.)	500 VAC coil to contact 500 VAC between open contacts
Insulation Resistance	1 megohm min. at 20°C, 500 VDC 50% RH
Dropout	Greater than 10% of nominal coil voltage
Ambient Temperature	At nominal coil voltage
Operating	-40°C (-40°F) to 85°C (185°F)
Storage	-40°C (-40°F) to 105°C (221°F)
Vibration	0.062" DA at 10-55 Hz
Shock	10 g
Enclosure	P.B.T. polyester
Terminals	Tinned copper alloy, P.C.
Weight	13 grams

AZ947

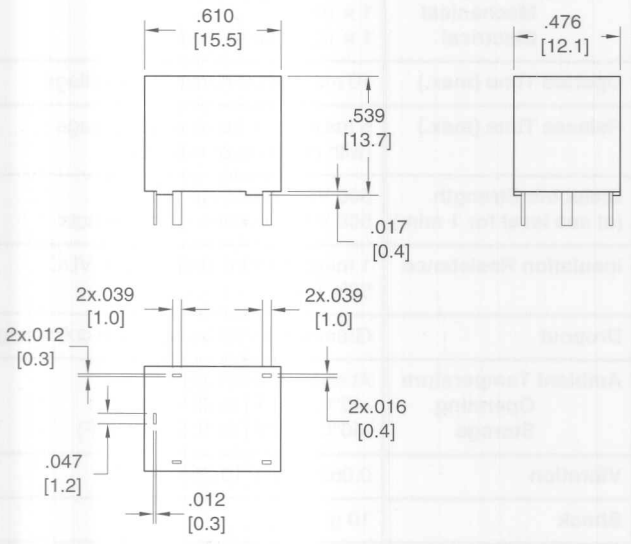
RELAY ORDERING DATA

COIL SPECIFICATIONS				ORDER NUMBER*	
Nominal Coil VDC	Must Operate VDC	Max. Continuous VDC	Coil Resistance ± 10%	SPST	SPDT
6	3.6	8.1	60	AZ947–1A–6D	AZ947–1C–6D
9	5.4	12.2	135	AZ947–1A–9D	AZ947–1C–9D
12	7.3	16.2	240	AZ947–1A–12D	AZ947–1C–12D
24	14.4	32.5	960	AZ947–1A–24D	AZ947–1C–24D

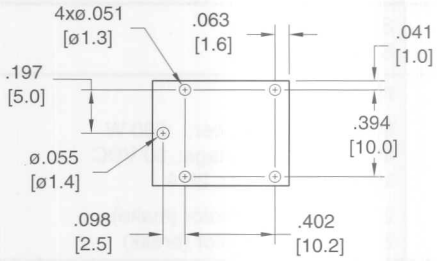
*Relays come with silver nickel contacts standard. For silver tin oxide, add the suffix "A." For epoxy sealed version, add suffix "E."

MECHANICAL DATA

Outline Dimensions

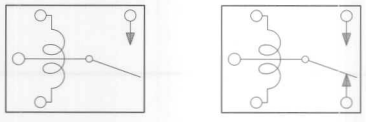


PC Board Layout



VIEWED TOWARD TERMINALS

Wiring Diagram



VIEWED TOWARD TERMINALS

Dimensions in inches with metric equivalents in parentheses. Tolerance: ± .010"

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AZ951 / AZ952

SUBMINIATURE POWER RELAY

FEATURES

- Subminiature size for high density packaging
- Coil sensitivity to 116 mW
- Extremely low cost
- Coils to 24 VDC
- Epoxy sealed for automatic wave soldering
- 1 Amp & 5 Amp contacts
- Life expectancy to 10 million operations
- UL and Canadian file E43203

CONTACTS

Arrangement	SPDT (1 Form C)
Ratings	Resistive load:
Light Duty	Max. switched power: 30 W or 125 VA Max. switched current: 1 A Max. switched voltage: 150 VDC or 300 VAC UL Rating: 1 A at 30 VDC 1 A at 125 VAC
Heavy Duty	Max. switched power: 150 W or 625 VA Max. switched current: 5 A Max. switched voltage: 150 VDC or 300 VAC UL Rating: 5 A at 14 VDC 5 A at 125 VAC
Material	Silver alloy, gold plated
Resistance	< 100 milliohms initially

COIL

Power	
At Pickup Voltage (typical)	Standard Coil: 253 mW Sensitive coil: 116 mW
Max Continuous Dissipation	0.8 W at 20°C (68°F) ambient 0.6 W at 40°C (104°F) ambient
Temperature Rise	At nominal coil voltage: Standard: 54°C (97°F) Sensitive: 30°C (54°F)
Max. Temperature	105°C (221°F)

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Other coil resistances and sensitivities available upon request.
4. Specifications subject to change without notice.

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 1 x 10^7 1 x 10^5 at rated load
Operate Time (typical)	5 ms at nominal coil voltage
Release Time (typical)	1 ms at nominal coil voltage (with no coil suppressions)
Dielectric Strength (at sea level for 1 min.)	1250 Vrms coil to contact 750 Vrms between open contacts
Insulation Resistance	100 megohms min. at 20°C, 500 VDC
Dropout	Greater than 10% of nominal coil voltage
Ambient Temperature **Operating**	At nominal coil voltage Standard: -25°C (-13°F) to 55°C (131°F) Sensitive: -25°C (-13°F) to 75°C (167°F)
Storage	Both: -25°C (-13°F) to 105°C (221°F)
Vibration	0.062" DA at 10–55Hz
Shock	15 g
Enclosure	P.B.T. polyester
Terminals	Tinned copper alloy
Max. Solder Temp.	270°C (518°F)
Max. Solder Time	5 seconds
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 seconds
Weight	3.5 grams

AZ951 / AZ952

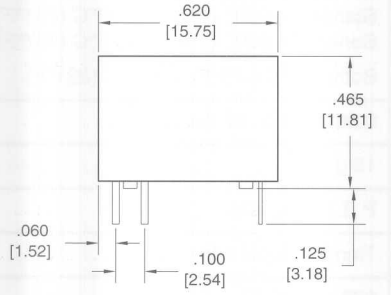
RELAY ORDERING DATA

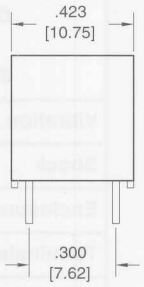
STANDARD RELAYS — Light Duty Type					
COIL SPECIFICATIONS				ORDER NUMBER	
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ±10%	Must Operate VDC		
5	6.7	56	3.75	AZ951–1C–5DE	AZ952–1C–5DE
6	8.0	80	4.50	AZ951–1C–6DE	AZ952–1C–6DE
12	16.0	320	9.0	AZ951–1C–12DE	AZ952–1C–12DE
24	32.0	1280	18.0	AZ951–1C–24DE	AZ952–1C–24DE

SENSITIVE RELAYS — Light Duty Type					
COIL SPECIFICATIONS				ORDER NUMBER	
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ±10%	Must Operate VDC		
5	8.5	120	3.75	AZ951–1C–5DSE	AZ952–1C–5DSE
6	10.4	180	4.50	AZ951–1C–6DSE	AZ952–1C–6DSE
9	15.3	400	6.75	AZ951–1C–9DSE	AZ952–1C–9DSE
12	20.5	700	9.0	AZ951–1C–12DSE	AZ952–1C–12DSE
24	41.0	2800	18.0	AZ951–1C–24DSE	AZ952–1C–24DSE

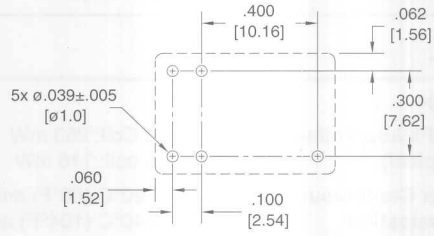
STANDARD RELAYS — Heavy Duty Type					
COIL SPECIFICATIONS				ORDER NUMBER	
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ±10%	Must Operate VDC		
5	6.7	56	3.75	AZ951–1CH–5DE	AZ952–1CH–5DE
6	8.0	80	4.50	AZ951–1CH–6DE	AZ952–1CH–6DE
12	16.0	320	9.0	AZ951–1CH–12DE	AZ952–1CH–12DE
24	32.0	1280	18.0	AZ951–1CH–24DE	AZ952–1CH–24DE

MECHANICAL DATA



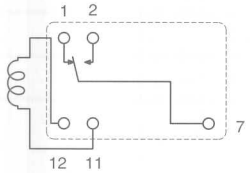


AZ951 PC BOARD LAYOUT



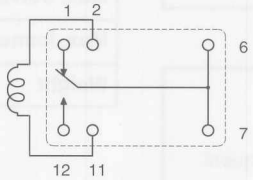
VIEWED TOWARD TERMINALS

AZ951 WIRING DIAGRAM



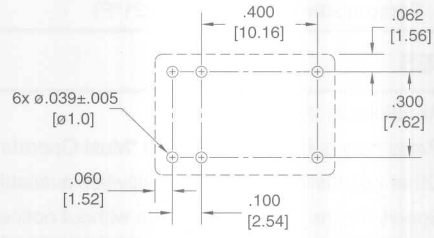
VIEWED TOWARD TERMINALS

AZ952 WIRING DIAGRAM



VIEWED TOWARD TERMINALS

AZ952 PC BOARD LAYOUT



VIEWED TOWARD TERMINALS

Dimensions in inches with metric equivalents in parentheses. Tolerance: ±0.010"

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SUBMINIATURE POWER RELAY

FEATURES

- Subminiature size for high density packaging
- Coil sensitivity to 114 mW
- Extremely low cost
- Coils to 24 VDC
- Epoxy sealed for automatic wave soldering
- 2 Amp contacts
- Life expectancy to 10 million operations
- UL, CUR file E43203

CONTACTS

Arrangement	SPDT (1 Form C)
Ratings	Resistive load:
Light Duty	Max. switched power: 30 W or 125 VA Max. switched current: 1 A Max. switched voltage: 150 VDC* or 300 VAC UL Rating: 1 A at 125 VAC General Use 1 A at 30 VDC Resistive
Medium Duty	Max. switched power: 30 W or 250 VA Max. switched current: 2 A Max. switched voltage: 150 VDC* or 300 VAC UL Rating: 2 A at 125 VAC General Use 1 A at 30 VDC Resistive
Material	Silver alloy
Resistance	< 100 milliohms initially

COIL

Power	
At Pickup Voltage (typical)	0.45 W coil: 253 mW 0.36 W coil: 203 mW 0.2 W coil: 114 mW
Max Continuous Dissipation	0.8 W at 20°C (68°F) ambient 0.6 W at 40°C (104°F) ambient
Temperature Rise	At nominal coil voltage: 0.45W: 54°C (97°F) 0.36W: 44°C (79°F) 0.2W: 30°C (54°F)
Max. Temperature	105°C (221°F)

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Other coil resistances and sensitivities available upon request.
4. Specifications subject to change without notice.

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 1 x 10^7 1 x 10^5 at rated load
Operate Time (typical)	5 ms at nominal coil voltage
Release Time (typical)	1 ms at nominal coil voltage (with no coil suppressions)
Dielectric Strength (at sea level for 1 min.)	1250 Vrms coil to contact 750 Vrms between open contacts
Insulation Resistance	100 megohms min. at 20°C, 500 VDC
Dropout	Greater than 10% of nominal coil voltage
Ambient Temperature **Operating**	At nominal coil voltage 0.45W: -25°C (-13°F) to 55°C (131°F) 0.36W: -25°C (-13°F) to 65°C (167°F) 0.2W: -25°C (-13°F) to 75°C (167°F)
Storage	-25°C (-13°F) to 105°C (221°F)
Vibration	0.062" DA at 10–55Hz
Shock	15 g
Enclosure	P.B.T. polyester
Terminals	Tinned copper alloy
Max. Solder Temp.	270°C (518°F)
Max. Solder Time	5 seconds
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 seconds
Weight	3.5 grams

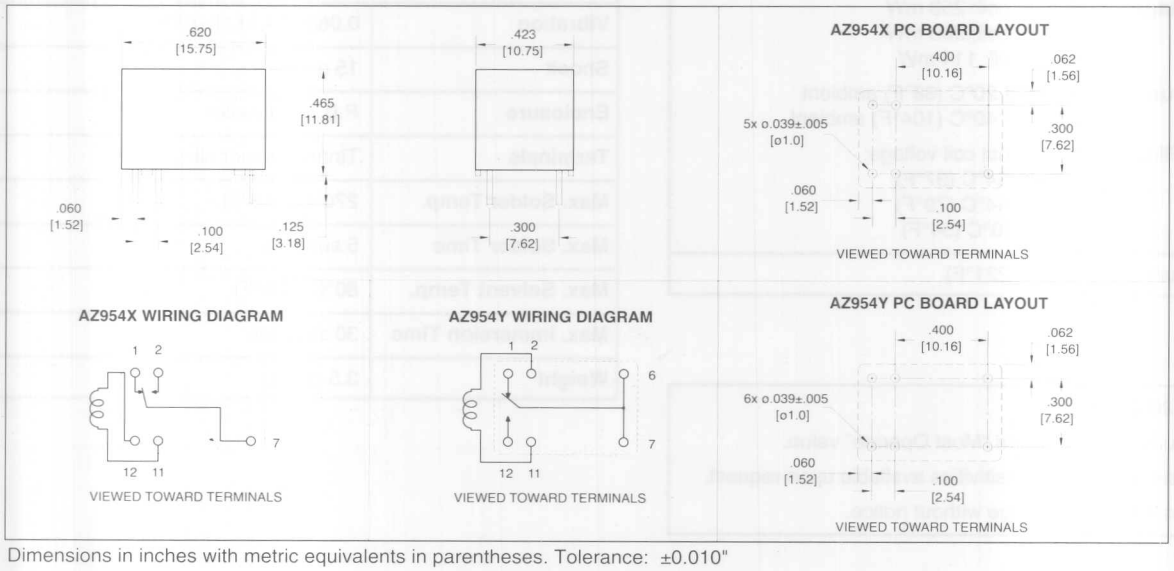
AZ954

RELAY ORDERING DATA

MEDIUM DUTY RELAYS – 0.45 W COIL					
COIL SPECIFICATIONS				ORDER NUMBER*	
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ±10%	Must Operate VDC		
3	4.0	20	2.25	AZ954X–1C–3D	AZ954Y–1C–3D
5	6.7	56	3.75	AZ954X–1C–5D	AZ954Y–1C–5D
6	8.0	80	4.50	AZ954X–1C–6D	AZ954Y–1C–6D
9	12.0	130	6.75	AZ954X–1C–9D	AZ954Y–1C–9D
12	16.0	320	9.0	AZ954X–1C–12D	AZ954Y–1C–12D
24	32.0	1280	18.0	AZ954X–1C–24D	AZ954Y–1C–24D
MEDIUM DUTY RELAYS – 0.36 W COIL					
COIL SPECIFICATIONS				ORDER NUMBER*	
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ±10%	Must Operate VDC		
3	4.5	25	2.25	AZ954X–1C–3DM	AZ954Y–1C–3DM
5	7.5	70	3.75	AZ954X–1C–5DM	AZ954Y–1C–5DM
6	8.9	100	4.50	AZ954X–1C–6DM	AZ954Y–1C–6DM
9	13.4	225	6.75	AZ954X–1C–9DM	AZ954Y–1C–9DM
12	17.8	400	9.0	AZ954X–1C–12DM	AZ954Y–1C–12DM
24	35.7	1600	18.0	AZ954X–1C–24DM	AZ954Y–1C–24DM
LIGHT DUTY RELAYS – 0.2 W COIL					
COIL SPECIFICATIONS				ORDER NUMBER*	
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ±10%	Must Operate VDC		
3	6.0	45	2.25	AZ954X–1C–3DS	AZ954Y–1C–3DS
5	9.8	120	3.75	AZ954X–1C–5DS	AZ954Y–1C–5DS
6	12.0	180	4.50	AZ954X–1C–6DS	AZ954Y–1C–6DS
9	17.8	400	6.75	AZ954X–1C–9DS	AZ954Y–1C–9DS
12	23.6	700	9.0	AZ954X–1C–12DS	AZ954Y–1C–12DS
24	47.3	2800	18.0	AZ954X–1C–24DS	AZ954Y–1C–24DS

* Add suffix "E" for epoxy sealed version

MECHANICAL DATA



Dimensions in inches with metric equivalents in parentheses. Tolerance: ±0.010"

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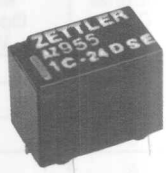
SUBMINIATURE PC BOARD RELAY



FEATURES

- Subminiature size for high density packaging
- DIL pitch terminals
- Epoxy sealed for automatic wave soldering
- High sensitivity: 150 mW nominal with 84 mW pickup
- Meets FCC Part 68.302 1500 V lightning surge
- Meets FCC Part 68.304 1000 V dielectric
- UL file E43203; CSA file LR 702514

CONTACTS

Arrangement	SPDT (1 Form C) Bifurcated crossbar contacts
Ratings **Light Duty**	Resistive load: Max. switched power: 30 W or 60 VA Max. switched current: 1 A Max. switched voltage: 60 VDC or 125 VAC **UL Rating:** 1 A at 30 VDC 0.3 A at 60 VDC 0.5 A at 125 VAC
Material	Silver alloy, gold clad
Resistance	< 100 milliohms initially

COIL

Power	
At Pickup Voltage (typical)	Standard coil:113 mW Sensitive coil: 84 mW
Max. Continuous Dissipation	.5 W at 20°C (68°F) ambient
Temperature Rise	Standard: 33°C (59°F) at nominal coil voltage Sensitive: 25°C (45°F) at nominal coil voltage
Temperature	Max. 105°C (221°F)

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Other coil resistances and sensitivities available upon request.
4. Specifications subject to change without notice.

GENERAL DATA

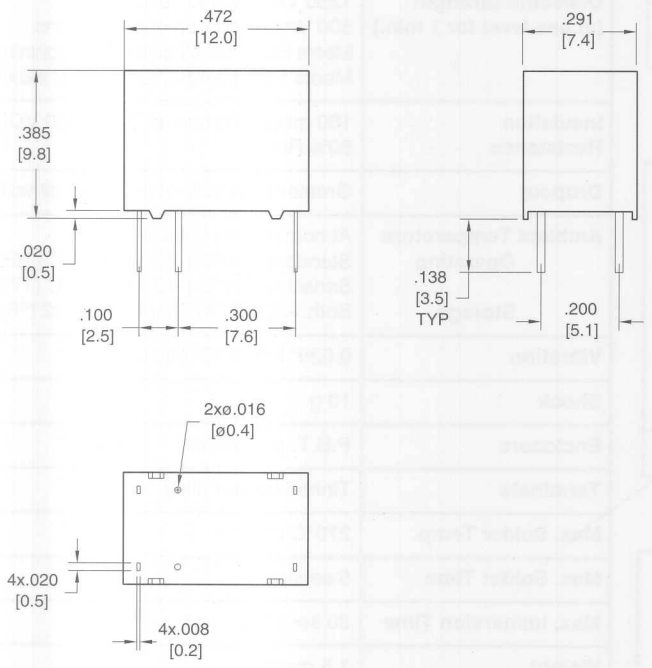
Life Expectancy **Mechanical** **Electrical**	Minimum operations 10 million operations 1 x 10^5 at rated load
Operate Time (typical)	Standard: 3 ms at nominal coil voltage Sensitive: 5 ms at nominal coil voltage
Release Time (typical)	1 ms at nominal coil voltage (with no coil suppression)
Capacitance	Coil to contact: 3.0 pF Contact to contact: 3.0 pF
Bounce (typical)	At 10 mA contact current 2 ms at operate 8 ms at release
Dielectric Strength (at sea level for 1 min.)	1250 Vrms coil to contact 500 Vrms between open contacts Meets FCC Part 68.302 1500 V lightning surge Meets FCC Part 68.304 1000 V dielectric
Insulation Resistance	100 megohms min. at 20°C, 500 VDC, 50% RH
Dropout	Greater than 10% of nominal coil voltage
Ambient Temperature **Operating** **Storage**	At nominal coil voltage Standard: -40°C (-40°F) to 70°C (158°F) Sensitive: -40°C (-40°F) to 80°C (176°F) Both: -25°C (-13°F) to 105°C (221°F)
Vibration	0.039" DA at 10–55 Hz
Shock	10 g
Enclosure	P.B.T. polyester
Terminals	Tinned copper alloy
Max. Solder Temp.	270°C (518°F)
Max. Solder Time	5 seconds
Max. Immersion Time	30 seconds
Weight	1.8 grams

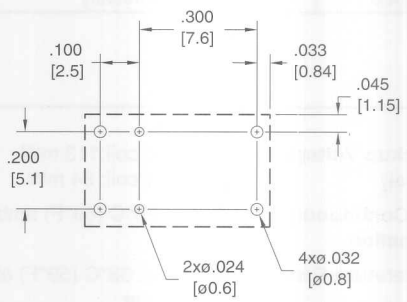
AZ955

RELAY ORDERING DATA

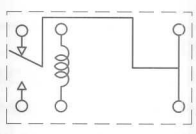
COIL SPECIFICATIONS: STANDARD COIL				
Nominal Coil VDC	Must. Operate VDC	Max. Continuous VDC	Coil Resistance ±10%	ORDER NUMBER
1.5	1.1	2.4	11.3	AZ955-1C-1.5DE
3	2.3	4.7	45.0	AZ955-1C-3DE
5	3.8	7.9	125	AZ955-1C-5DE
6	4.5	9.5	180	AZ955-1C-6DE
9	6.8	14.2	405	AZ955-1C-9DE
12	9.0	19.0	720	AZ955-1C-12DE
24	18.0	37.9	2880	AZ955-1C-24DE
COIL SPECIFICATIONS: SENSITIVE COIL				
Nominal Coil VDC	Must. Operate VDC	Max. Continuous VDC	Coil Resistance ±10%	ORDER NUMBER
1.5	1.1	2.7	15.0	AZ955-1C-1.5DSE
3	2.3	5.5	60.0	AZ955-1C-3DSE
5	3.8	9.1	167	AZ955-1C-5DSE
6	4.5	11.0	240	AZ955-1C-6DSE
9	6.8	16.4	540	AZ955-1C-9DSE
12	9.0	21.9	960	AZ955-1C-12DSE
24	18.0	43.8	3840	AZ955-1C-24DSE

MECHANICAL DATA





WIRING DIAGRAM
Viewed toward terminals



Dimensions in inches with metric equivalents in parentheses. Tolerance: ± .010"

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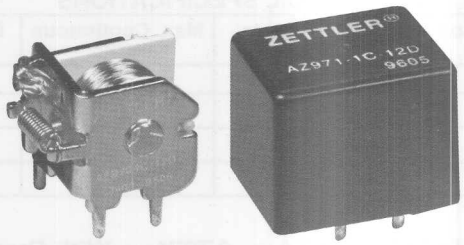
AZ970 / AZ971

40 AMP MINIATURE POWER RELAY FOR AUTOMOTIVE USE



FEATURES

- Low cost
- Up to 40 Amp switching capability in a compact size
- Open, covered or sealed
- Coils to 24 VDC
- Small footprint
- 1 Form A, B and C contacts available
- Vibration and shock resistant
- Designed for high in-rush applications

CONTACTS

Arrangement	SPST (1 Form A) SPST (1 Form B) SPDT (1 Form C)
Ratings	Resistive load: Max. switched power: Form A: 560 W Form B: 420 W Form C: 420 W Max. switched current: Form A: 40 A Form B: 30 A Form C: 30 A Max. switched voltage: 150* VDC Max. carry current: 60 A * If switching voltage is greater than 30 VDC, special precautions must be taken. Please contact the factory.
Minimum Load	5 VDC, 0.1 A
Material	Silver alloy
Resistance	< 100 milliohms initially (24 V, 1 A voltage drop method)

COIL

Power	
At Pickup Voltage (typical)	514 mW (12 and 24 VDC Coil) 573 mW (6 VDC Coil)
Max. Continuous Dissipation	4.8 W 20°C (68°F) ambient (AZ970) 3.8 W 20°C (68°F) ambient (AZ971)
Temperature Rise	60°C (108°F) nominal coil VDC (AZ970) 75°C (135°F) nominal coil VDC (AZ971)
Max. Temperature	200°C (392°F)

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 5 x 10^6 operations 1 x 10^5 operations at rated load
Operate Time (typical)	3 ms at nominal coil voltage
Release Time (typical)	5 ms at nominal coil voltage (with no coil suppression)
Dielectric Strength (at sea level for 1 min.)	500 VDC coil to contact 500 VDC between open contacts
Insulation Resistance	100 megohms min. at 20°C, 500 VDC, 50% RH
Dropout	Greater than 6% of nominal coil voltage
Ambient Temperature	At nominal coil voltage
AZ970 Operating **AZ970 Storage**	-40°C (-40°F) to 140°C (284°F) -40°C (-40°F) to 200°C (392°F)
AZ971 Operating **AZ971 Storage**	-40°C (-40°F) to 125°C (257°F) -40°C (-40°F) to 175°C (347°F)
Vibration	0.062" DA at 10–55 Hz
Shock	10 g
Enclosure	P.B.T. polyester
Terminals	Tinned copper alloy, P.C.
Max. Solder Temp.	270°C (518°F)
Max. Solder Time	5 seconds
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 seconds
Weight	20 grams

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Specifications subject to change without notice.

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AZ970 / AZ971

RELAY ORDERING DATA — AZ970 — OPEN STYLE

COIL SPECIFICATIONS				ORDER NUMBER		
Nominal Coil VDC	Must Operate VDC	Max. Continuous VDC	Coil Resistance ±10%	Form A (SPST)	Form B (SPST)	Form C (SPDT)
6	3.3	9.0	19.0	AZ970–1A–6D	AZ970–1B–6D	AZ970–1C–6D
9	5.1	14.7	50.0	AZ970–1A–9D	AZ970–1B–9D	AZ970–1C–9D
12	6.8	19.6	90.0	AZ970–1A–12D	AZ970–1B–12D	AZ970–1C–12D
24	13.9	39.3	362.0	AZ970–1A–24D	AZ970–1B–24D	AZ970–1C–24D

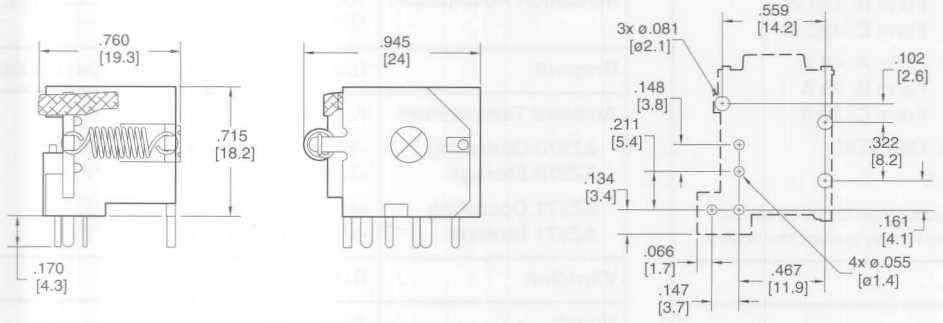
RELAY ORDERING DATA — AZ971 — With Dust Cover

COIL SPECIFICATIONS				ORDER NUMBER*		
Nominal Coil VDC	Must Operate VDC	Max. Continuous VDC	Coil Resistance ±10%	Form A (SPST)	Form B (SPST)	Form C (SPDT)
6	3.3	8.1	19.0	AZ971–1A–6D	AZ971–1B–6D	AZ971–1C–6D
9	5.1	14.7	50.0	AZ971–1A–9D	AZ971–1B–9D	AZ971–1C–9D
12	6.8	17.6	90.0	AZ971–1A–12D	AZ971–1B–12D	AZ971–1C–12D
24	13.9	35.4	362.0	AZ971–1A–24D	AZ971–1B–24D	AZ971–1C–24D

*Add suffix "E" for epoxy sealed version.

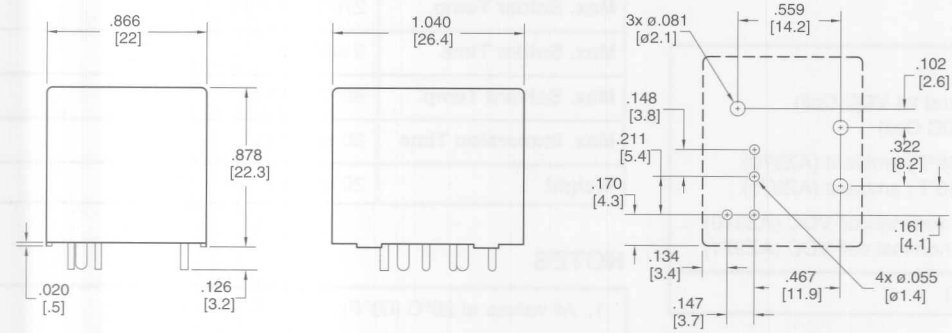
MECHANICAL DATA

AZ970 Outline Dimensions and PCB Layout



Viewed towards terminals

AZ971 Outline Dimensions and PCB Layout

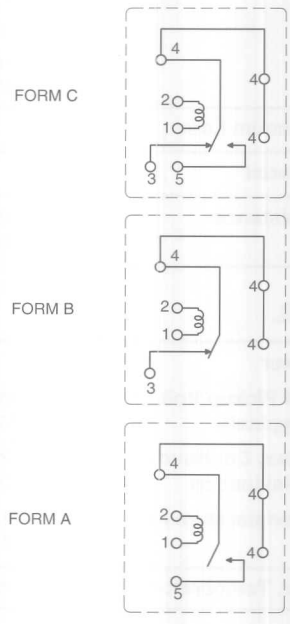


Viewed towards terminals

Terminal Dimensions

Term.	Dimensions
3,5	.041 [1.02] x .03 [0.76]
1,2	.041 [1.02] x .018 [0.46]
4	.041 [1.02] x .062 [1.57]

Wiring Diagrams



Viewed towards terminals

Dimensions in inches with metric equivalents in parentheses. Tolerance: ±0.010"

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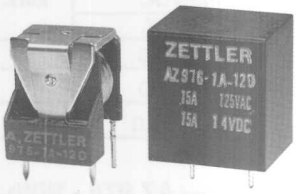
AZ975 / AZ976

20 AMP SUB-MINIATURE POWER RELAY FOR AUTOMOTIVE USE



FEATURES

- Low cost
- Up to 20 Amp switching capability in a compact size
- Open, covered or sealed
- Coils to 24 VDC
- Small footprint
- Six different contact arrangements available
- Vibration and shock resistant
- Designed for high in-rush applications

CONTACTS

Arrangement	SPSTNO (1 Form A) SPST NO DM (1 Form U) SPSTNC (1 Form B) SPST NC DB (1 Form V) SPDT (B-M) SPDT NC-NO DM (1 Form C) (1 Form W)
Ratings	Max. switched power: 200 W (See power curve) 500 VA Max. switched voltage: 100 VDC Max. switched current (make/break), continuous: 1 Form A: 60A/20A, 15A 1 Form B: 12A/10A, 10A 1 Form C (NO): 60A/20A, 15A 1 Form C (NC): 12A/10A, 10A 1 Form U: 2X40A/2X20A, 2X10A 1 Form V: 2X8A/2X7A, 2X7A 1 Form W (NO): 2X30A/2X15A, 2X7A 1 Form W (NC): 2X5A/2X5A. 2X5A
Minimum Load	12 VDC, 0.5 A
Material	AgNi
Resistance	< 100 milliohms at 1A, 5 VDC

COIL

Power	
At Pickup Voltage (typical)	514 mW (12 and 24 VDC Coil) 573 mW (6 VDC Coil)
Max. Continuous Dissipation	2.5 W 20°C (68°F) ambient
Temperature Rise	60°C (108°F) nominal coil VDC
Max. Temperature	155°C (311°F)

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 1 x 10^7 operations 1 x 10^5 operations at rated load
Operate Time (typical)	3 ms at nominal coil voltage
Release Time (typical)	1.5 ms at nominal coil voltage (with no coil suppression)
Dielectric Strength (at sea level for 1 min.)	500 Vrms coil to contact 500 Vrms between open contacts
Insulation Resistance	100 megohms min. at 20°C, 500 VDC, 50% RH
Dropout	> 6% (for B&V), > 11% (for ACUW) of nominal coil voltage
Ambient Temperature **Operating** **Storage**	At nominal coil voltage -40°C (-40°F) to 85°C (185°F) -40°C (-40°F) to 155°C (311°F)
Vibration	0.062" DA at 10–55Hz
Shock	10 g, 11 ms, functional
Terminals	Tinned copper alloy, P.C.
Max. Solder Temp.	270°C (518°F)
Max. Solder Time	5 seconds
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 seconds
Weight	AZ975 = 8g, AZ976 = 12g, approx.

NOTES

1. All values at 20°C (68°F).
2. Maximum make current refers to in-rush current of lamp load.
3. Electrical life obtained at resistive or inductive load of 10A, 15 VDC for A, B, C, U, V contacts, 7A, 15 VDC for W contacts with suitable arc-suppression circuit attached with operating frequency of 1 ops/sec.
4. Relay may pull in with less than "Must Operate" value.
5. Specifications subject to change without notice.

AZ975 / AZ976

RELAY ORDERING DATA — AZ 975 - Open Style

COIL SPECIFICATIONS - DC Coil					ORDER NUMBER		
Nominal Coil VDC	Must Operate VDC A.B.C.U.V.	Must Operate VDC W.	Max. Continuous VDC	Coil Resistance ±10%	Form A [SPST NO]	Form B [SPST NC]	Form C [SPDT]
6	3.75	4.5	8.4	28	AZ975–1A–6D	AZ975–1B–6D	AZ975–1C–6D
12	7.5	9.0	18.0	130	AZ975–1A–12D	AZ975–1B–12D	AZ975–1C–12D
24	15.0	18.0	36.0	520	AZ975–1A–24D	AZ975–1B–24D	AZ975–1C–24D

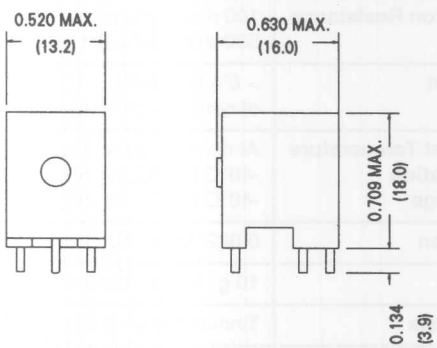
RELAY ORDERING DATA — AZ 976 - With Dust Cover

COIL SPECIFICATIONS - DC Coil					ORDER NUMBER		
Nominal Coil VDC	Must Operate VDC A.B.C.U.V.	Must Operate VDC W.	Max. Continuous VDC	Coil Resistance ±10%	Form A [SPST NO]	Form B [SPST NC]	Form C [SPDT]
6	3.75	4.5	8.4	28	AZ976–1A–6D	AZ976–1B–6D	AZ976–1C–6D
12	7.5	9.0	18.0	130	AZ976–1A–12D	AZ976–1B–12D	AZ976–1C–12D
24	15.0	18.0	36.0	520	AZ976–1A–24D	AZ976–1B–24D	AZ976–1C–24D

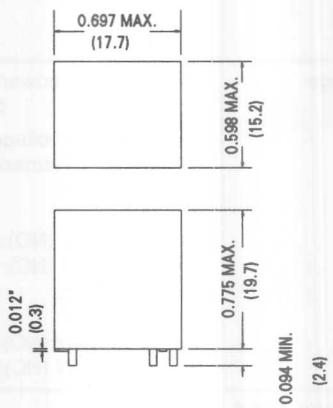
Add suffix "E" for epoxy sealed version. Use U, V or W in place of A for Form U, Form V or Form W relays.

MECHANICAL DATA

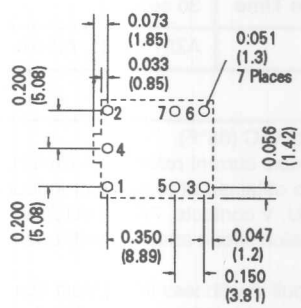
AZ 975 Outline Dimensions



AZ 976 Outline Dimensions

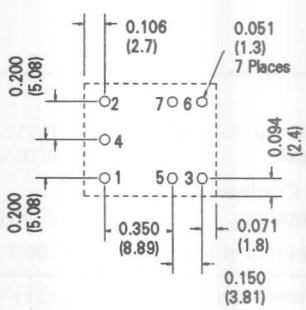


AZ 975 Suggested PCB Layout



Bottom View

AZ 976 Suggested PCB Layout



Bottom View

Dimensions in inches with metric equivalents in parentheses. Tolerance: ± 0.010⊕

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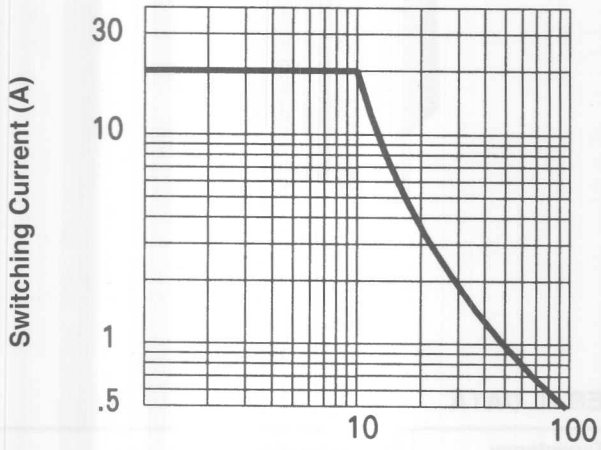
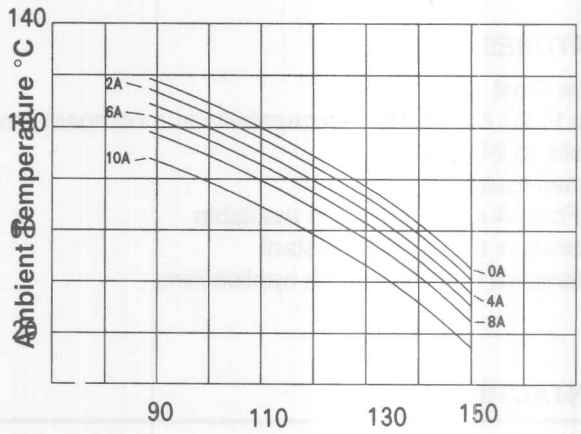
Load Power limit

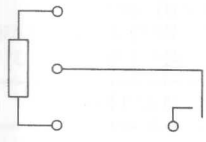


Max. Allowable Ambient Temperature

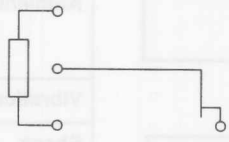


MECHANICAL DATA

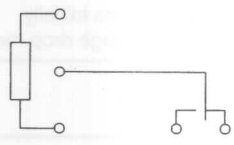
Wiring Diagrams (Bottom View)



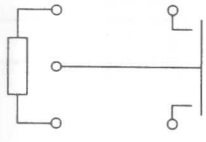
1 Form A



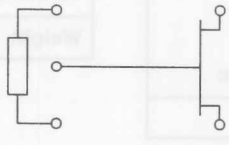
1 Form B



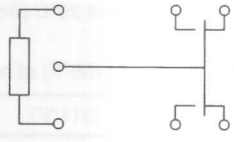
1 Form C



1 Form U



1 Form V



1 Form W

AZ977

20 AMP MINIATURE POWER RELAY FOR AUTOMOTIVE USE

FEATURES

- Low Cost
- Up to 20 Amp switching capability in a compact size
- Coils to 24 VDC
- Small footprint
- 1 Form A and C contacts available
- Vibration and shock resistant
- Designed for high in-rush applications

CONTACTS

Arrangement	SPST (1 Form A) SPDT (1 Form C)
Ratings	Resistive load: Max. switched power: 280 W Max. switched current: 20 A Max. switched voltage: 150 VDC* Rated load: 20 A at 14 VDC * If switching voltage is greater than 30 VDC, special precautions must be taken. Please contact the factory.
Minimum Load	5 VDC, 0.1 A
Material	AgSnO2
Resistance	< 50 milliohms initially (6V, 1 A voltage drop method)

COIL

Power	
At Pickup Voltage (typical)	534 mW (Standard) 432 mW (Sensitive)
Max. Continuous Dissipation	2.6 W at 20°C (68°F) ambient
Temperature Rise	60°C (108°F) at nominal coil voltage
Max Temperature	155°C (311°F)

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Specifications subject to change without notice.

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 1 x 10^6 1 x 10^5 at rated load
Operate Time (max.)	10 ms max. at nominal coil voltage
Release Time (max.)	7 ms max. at nominal coil voltage (with no coil suppression)
Dielectric Strength (at sea level for 1 min.)	500 VDC coil to contact 500 VDC between open contacts
Insulation Resistance	1 megohm min. at 20°C, 500 VDC 50% RH
Dropout	Greater than 8.3% of nominal coil voltage
Ambient Temperature **Operating** **Storage**	At nominal coil voltage -40°C (-40°F) to 115°C (239°F) -40°C (-40°F) to 155°C (311°F)
Vibration	0.062" DA at 10-55 Hz
Shock	10 g
Enclosure	P.B.T. polyester
Terminals	Tinned copper alloy, P.C.
Weight	16 grams

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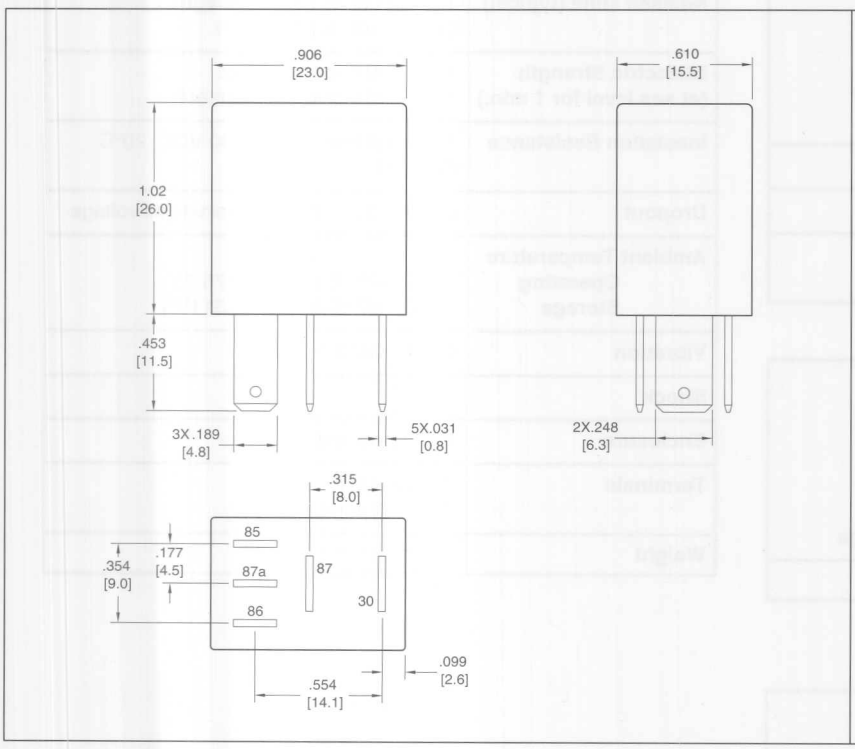
RELAY ORDERING DATA

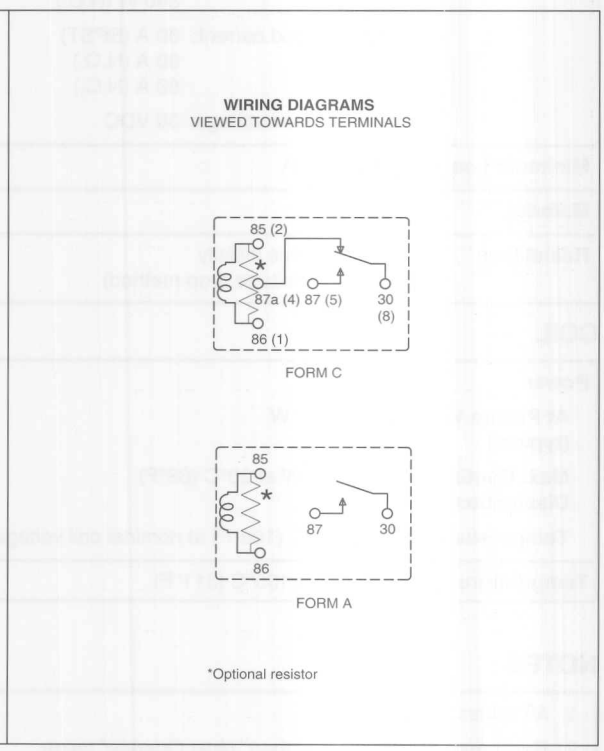
STANDARD RELAYS					
COIL SPECIFICATIONS				ORDER NUMBER*	
Nominal Coil VDC	Must Operate VDC	Max. Continuous VDC	Coil Resistance ± 10%	Form A (SPST)	Form C (SPDT)
6	3.6	7.8	25	AZ977-1A-6D	AZ977-1C-6D
12	7.2	15.6	97	AZ977–1A–12D	AZ977–1C–12D
24	14.4	31.2	384	AZ977–1A–24D	AZ977–1C–24D

SENSITIVE RELAYS					
COIL SPECIFICATIONS				ORDER NUMBER*	
Nominal Coil VDC	Must Operate VDC	Max. Continuous VDC	Coil Resistance ± 10%	Form A (SPST)	Form C (SPDT)
6	3.6	7.8	32	AZ977-1A-6DS	AZ977-1C-6DS
12	7.2	15.6	123	AZ977–1A–12DS	AZ977–1C–12DS
24	14.4	31.2	483	AZ977–1A–24DS	AZ977–1C–24DS

*Add suffix "R" for resistor in parallel with coil. Resistor values: 6V: 180 Ω, 12V:680 Ω, 24V:2700 Ω

MECHANICAL DATA





Dimensions in inches with metric equivalents in parentheses. Tolerance: ± .010"

AZ979

80 AMP AUTOMOTIVE RELAY

FEATURES

- 80 Amp contact rating
- High momentary carry current
- High operating temperature (80°C)
- SPST (1 Form A), SPDT (1 Form C)
- Quick connect terminals

CONTACTS

Arrangement	SPST (1 Form A) SPDT (1 Form C)
Ratings	Resistive load: Max. switched power: 1120 W (SPST) 1120 W (N.O.) 840 W (N.C.) Max. switched current: 80 A (SPST) 80 A (N.O.) 60 A (N.C.) Max. switched voltage: 30 VDC
Minimum Load	5 VDC, 0.1 A
Material	Silver alloy
Resistance	< 50 milliohms initially (24 V, 1 A voltage drop method)

COIL

Power	
At Pickup Voltage (typical)	0.68 W
Max. Continuous Dissipation	3.2 W at 20°C (68°F)
Temperature Rise	60°C (108°F) at nominal coil voltage
Temperature	Max.155°C (311°F)

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Specifications subject to change without notice.

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 1 x 10^7 1 x 10^5 at rated load
Operate Time (typical)	10 ms at nominal coil voltage
Release Time (typical)	10 ms at nominal coil voltage (with no coil suppression)
Dielectric Strength (at sea level for 1 min.)	1500 Vrms coil to contact 1500 Vrms contact to contact
Insulation Resistance	100 megohms min. at 500 VDC, 20°C 50% RH
Dropout	Greater than 10% of nominal coil voltage
Ambient Temperature **Operating** **Storage**	 -30°C (-22°F) to 80°C (176°F) -30°C (-22°F) to 155°C (311°F)
Vibration	0.062" DA at 10-55 Hz
Shock	10 g
Enclosure	P.B.T. polyester
Terminals	Copper alloy Quick Connect
Weight	47 grams

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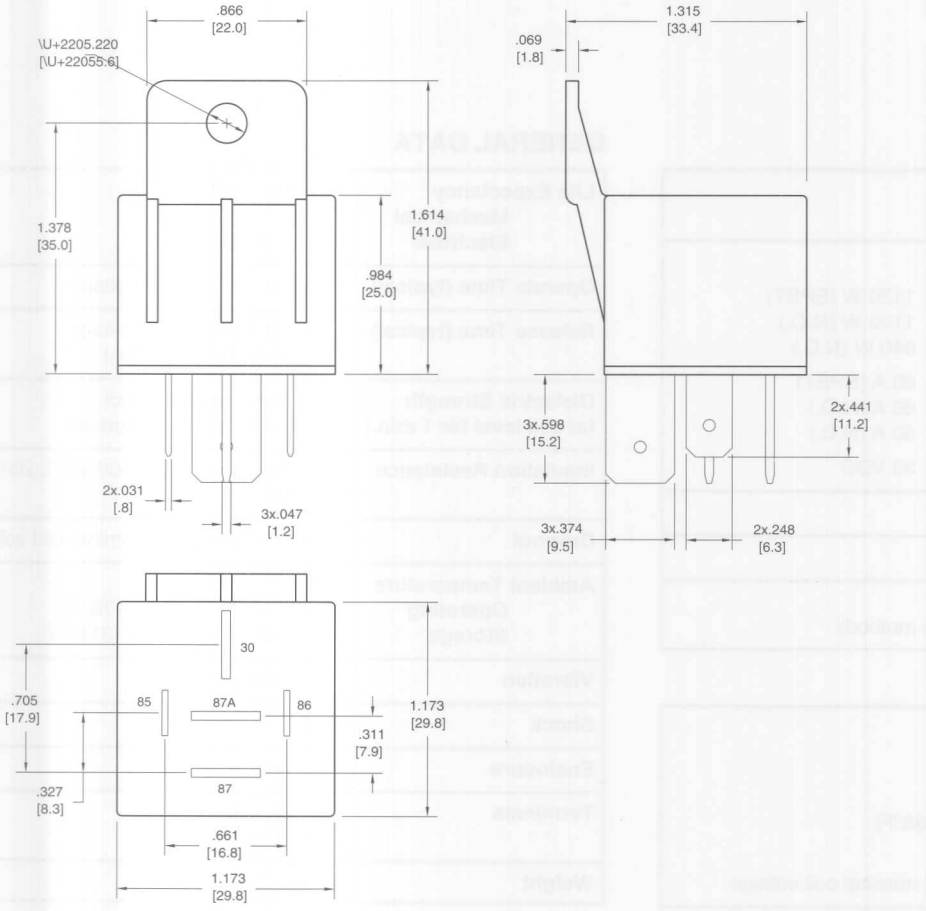
RELAY ORDERING DATA

COIL SPECIFICATIONS				ORDER NUMBER	
Nominal Coil VDC	Must Operate VDC	Max. Continuous VDC	Coil Resistance ± 10%	SPST	SPDT
12	7.8	16.9	90	AZ979–1A–12D	AZ979–1C–12D
24	15.6	33.9	360	AZ979–1A–24D	AZ979–1C–24D

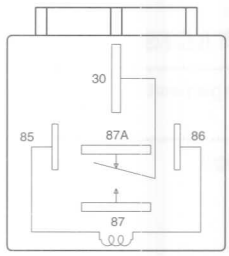
MECHANICAL DATA

Outline Dimensions

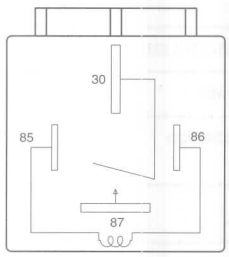


Wiring Diagrams

SPDT



SPST (N.O.)



VIEWED TOWARD TERMINALS

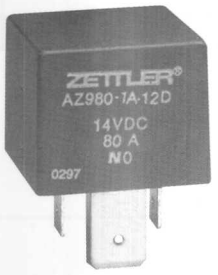
Dimensions in inches with metric equivalents in parentheses. Tolerance: ± .010"

AZ980

80 AMP AUTOMOTIVE RELAY

FEATURES

- 80 Amp contact rating
- High momentary carry current
- High operating temperature (80°C)
- SPST (1 Form A), SPDT (1 Form C)
- Quick connect terminals



CONTACTS

Arrangement	SPST (1 Form A) SPDT (1 Form C)
Ratings	Resistive load: Max. switched power: 1120 W (SPST) 1120 W (N.O.) 840 W (N.C.) Max. switched current: 80 A (SPST) 80 A (N.O.) 60 A (N.C.) Max. switched voltage: 30 VDC
Minimum Load	5 VDC, 0.1 A
Material	Silver alloy
Resistance	< 50 milliohms initially (24 V, 1 A voltage drop method)

COIL

Power	
At Pickup Voltage (typical)	0.68 W
Max. Continuous Dissipation	3.2 W at 20°C (68°F)
Temperature Rise	60°C (108°F) at nominal coil voltage
Temperature	Max. 155°C (311°F)

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Specifications subject to change without notice.

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 1 x 10^7 1 x 10^5 at rated load
Operate Time (typical)	10 ms at nominal coil voltage
Release Time (typical)	10 ms at nominal coil voltage (with no coil suppression)
Dielectric Strength (at sea level for 1 min.)	1500 Vrms coil to contact 1500 Vrms contact to contact
Insulation Resistance	100 megohms min. at 500 VDC, 20°C 50% RH
Dropout	Greater than 10% of nominal coil voltage
Ambient Temperature **Operating** **Storage**	 -30°C (-22°F) to 80°C (176°F) -30°C (-22°F) to 155°C (311°F)
Vibration	0.062" DA at 10-55 Hz
Shock	10 g
Enclosure	P.B.T. polyester
Terminals	Copper alloy Quick Connect
Weight	47 grams

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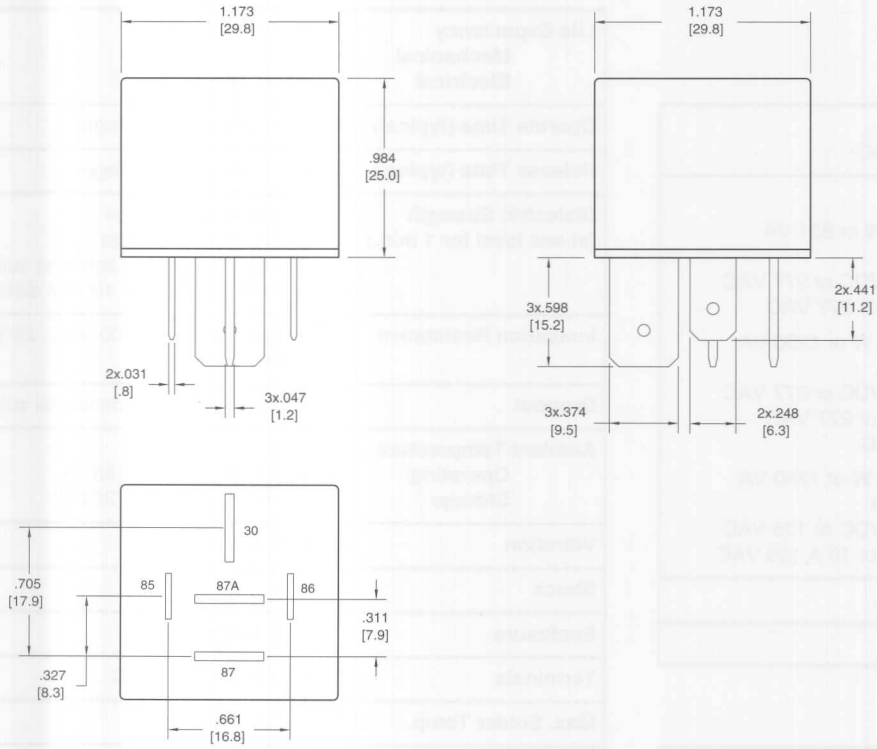
RELAY ORDERING DATA

COIL SPECIFICATIONS				ORDER NUMBER	
Nominal Coil VDC	Must Operate VDC	Max. Continuous VDC	Coil Resistance ± 10%	SPST	SPDT
12	7.8	16.9	90	AZ980–1A–12D	AZ980–1C–12D
24	15.6	33.9	360	AZ980–1A–24D	AZ980–1C–24D

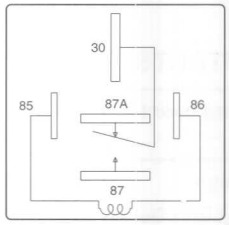
MECHANICAL DATA

Outline Dimensions

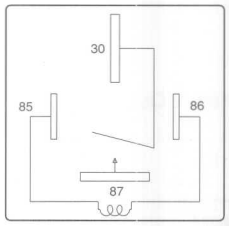


Wiring Diagrams

SPDT



SPST (N.O.)



VIEWED TOWARD TERMINALS

Dimensions in inches with metric equivalents in parentheses. Tolerance: ± .010"

AZ991

MINIATURE PC BOARD RELAY

FEATURES

- Contacts rated at 3, 5 or 10 Amps
- Meets FCC Part 68.302 1500 lightning surge
- Meets FCC Part 68.304 1000 V dielectric
- 0.240" (6.1 mm) min. between coil and contact
- Low cost
- DC coils to 48 VDC
- Flux-tight available
- UL file E44211; CSA file 73566

CONTACTS

Arrangement	SPDT (1 Form C) (Form A available on request)
Ratings	Resistive load:
Light Duty	Max. switched power: 90 W or 831 VA Max. switched current: 3 A Max. switched voltage: 30 VDC or 277 VAC **UL Rating:** 3 A at 30 VDC or 277 VAC
Medium Duty	Max. switched power: 150 W or 1250 VA Max. switched current: 5 A Max. switched voltage: 30 VDC or 277 VAC **UL Rating:** 5 A at 30 VDC or 277 VAC 1/10 HP 277 VAC
Heavy Duty	Max. switched power: 300 W or 1250 VA Max. switched current: 10 A Max. switched voltage: 30 VDC or 125 VAC **UL Rating:** 5 A at 30 VDC or 10 A 125 VAC
Material	Silver alloy
Resistance	< 100 milliohms initially

COIL

Power	
At Pickup Voltage (typical)	256 mW
Max. Continuous Dissipation	1.1 W at 20°C (68°F) ambient 0.86 W at 40°C (104°F) ambient
Temperature Rise	30°C (54°F) at nominal coil voltage
Temperature	Max. 105°C (267°F)

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 1 x 10^7 1 x 10^5 at rated load
Operate Time (typical)	6 ms at nominal coil voltage
Release Time (typical)	2 ms at nominal coil voltage
Dielectric Strength (at sea level for 1 min.)	2500 Vrms contact to coil 750 Vrms across contacts Meets FCC Part 68.302 lightning surge Meets FCC Part 68.304 1000 V dielectric
Insulation Resistance	100 megohms min. at 500 VDC, 20°C 50% RH
Dropout	Greater than 10% of nominal coil voltage
Ambient Temperature **Operating** **Storage**	 -40°C (-13°F) to 70°C (158°F) -55°C (-67°F) to 105°C (221°F)
Vibration	0.062" DA at 10–55 Hz
Shock	10 g
Enclosure	P.B.T. polyester
Terminals	Tinned copper alloy, P.C.
Max. Solder Temp.	270°C (500°F)
Max. Solder Time	5 seconds
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 seconds
Weight	30 grams

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Unsealed version available upon request.
4. Tape should be pulled off after wave solder and cleaning.
5. Specifications subject to change without notice.

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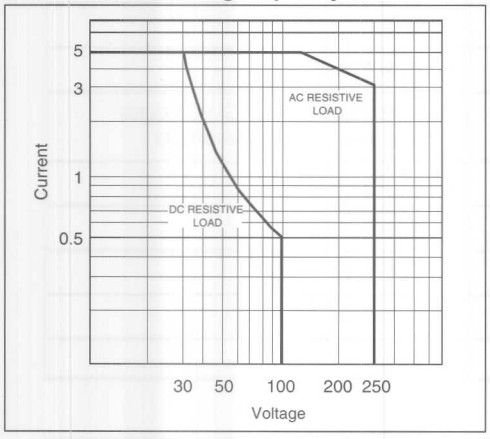
RELAY ORDERING DATA

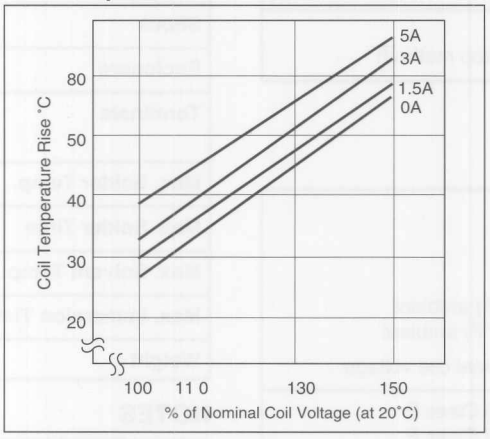
STANDARD RELAYS: Light Duty (3 Amp Contact)				
COIL SPECIFICATIONS				ORDER NUMBER*
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%	Must Operate VDC	
5	8.4	63	4.0	AZ991–1C–5D
6	10.0	90	4.8	AZ991–1C–6D
9	15.1	202	7.2	AZ991–1C–9D
12	20.2	360	9.6	AZ991–1C–12D
24	40.3	1,440	19.2	AZ991–1C–24D
48	80.7	5,760	38.4	AZ991–1C–48D
STANDARD RELAYS: Medium Duty (5 Amp Contact)				
COIL SPECIFICATIONS				ORDER NUMBER*
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%	Must Operate VDC	
5	8.4	63	4.0	AZ991–1CH–5D
6	10.0	90	4.8	AZ991–1CH–6D
9	15.1	202	7.2	AZ991–1CH–9D
12	20.2	360	9.6	AZ991–1CH–12D
24	40.3	1,440	19.2	AZ991–1CH–24D
48	80.7	5,760	38.4	AZ991–1CH–48D
STANDARD RELAYS: Heavy Duty (10 Amp Contact)				
COIL SPECIFICATIONS				ORDER NUMBER*
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ± 10%	Must Operate VDC	
5	8.4	63	4.0	AZ991–1CT–5D
6	10.0	90	4.8	AZ991–1CT–6D
9	15.1	202	7.2	AZ991–1CT–9D
12	20.2	360	9.6	AZ991–1CT–12D
24	40.3	1,440	19.2	AZ991–1CT–24D
48	80.7	5,760	38.4	AZ991–1CT–48D

* Add suffix "L" for flux-tight version

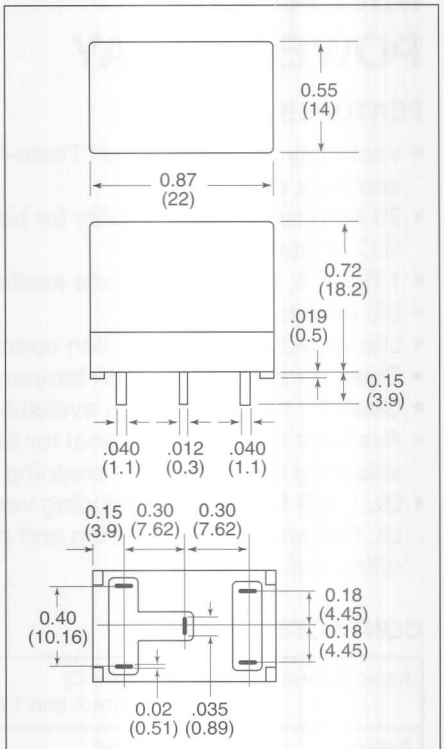
Maximum Switching Capacity



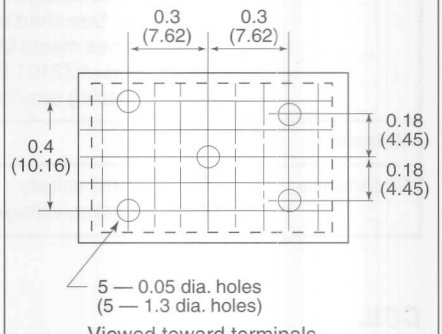
Coil Temperature Rise vs. Coil Power



MECHANICAL DATA

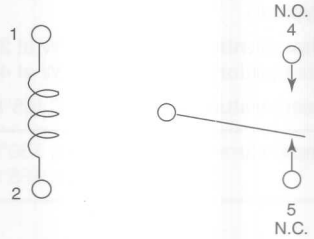


PC BOARD LAYOUT



Viewed toward terminals

WIRING DIAGRAM



Viewed toward terminals

Dimensions in inches with metric equivalents in parentheses. Tolerance: ± .010"

AZ2100

MINIATURE POWER RELAY

FEATURES

- Versatility of both PC and "Trace-Saver" quick-connect terminals on contacts
- 30 Amp switching capability for both N.O. and N.C. contacts
- 1 Form A, B and C contacts available
- DC coils to 120 VDC
- Life expectancy to 10 million operations
- Class B insulation for high temperature applications
- Class F (155°C) versions available
- Available with an epoxy seal for automatic wave soldering and immersion cleaning
- UL, CUR file E44211 including versions meeting UL 508 and UL 873 spacing and contact rating requirements

CONTACTS

Arrangement	SPDT (1 Form C) SPST (1 Form A and 1 Form B)
Ratings	Resistive load: Max. switched power: 900 W or 7200 VA Max. switched current: 30 A Max. switched voltage: 30 VDC or 300 VAC **UL Rating:** See chart for UL contact ratings. AZ2100 Series meets UL 508 Group A spacing requirements. AZ2101 Series meets UL 508 Group B spacing requirements.
Material	Silver alloy
Resistance	< 20 milliohms initially (at rated current, voltage drop method)

COIL

Power	
At Pickup Voltage (typical)	500 mW
Max. Continuous Dissipation	2.2 W at 20°C (68°F) ambient 1.8 W at 40°C (104°F) ambient
Temperature Rise	36°C (65°F) at nominal coil voltage
Temperature	Max. 130°C (266°F) Class B Max. 155°C (311°F) Class F

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 1 x 10^7 1 x 10^5 at rated load (N.O.) 3 x 10^4 (N.C.)
Operate Time	Max.: 15 ms (including bounce) Typical: 9 ms (including bounce)
Release Time	Max.: 10 ms (including bounce) Typical: 7 ms (including bounce)
Dielectric Strength (at sea level for 1 min.)	Group A: 2500 Vrms contact to coil Group B: 2000 Vrms contact to coil 1500 Vrms between open contacts
Insulation Resistance	100 megohms min. at 500 VDC, 20°C, 50% RH
Dropout	Greater than 10% of nominal coil voltage
Ambient Temperature **Operating** **Storage**	 -55°C (-67°F) to 100°C (212°F) Class B -55°C (-67°F) to 125°C (257°F) Class F -55°C (-67°F) to 100°C (266°F) Class B -55°C (-67°F) to 155°C (311°F) Class F
Vibration	0.062" DA at 10–55 Hz
Shock	20 g
Enclosure	P.B.T. polyester
Terminals	Tinned copper alloy, P.C. with quick-connect tabs, .250" wide, on top
Max. Solder Temp.	270°C (518°F)
Max. Solder Time	5 seconds
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 seconds
Weight	43 grams

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Unsealed relays should not be dip cleaned.
4. Other coil resistances and sensitivities available upon request.
5. Specifications subject to change without notice.

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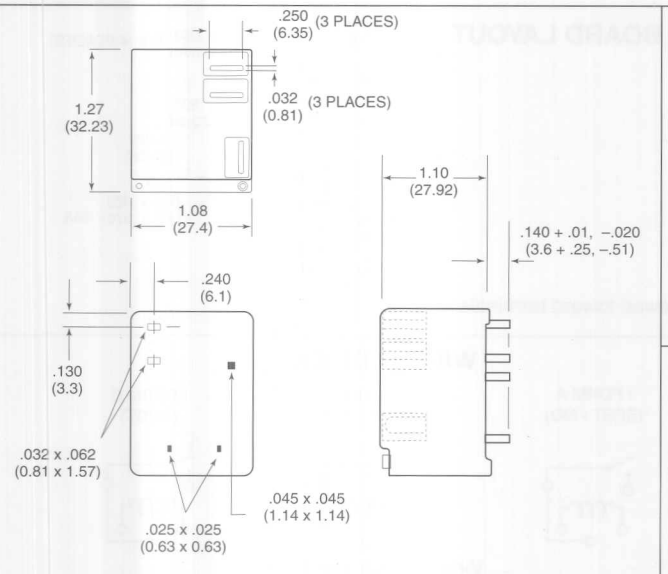
RELAY ORDERING DATA: UL 508 Group A; UL 873 Version

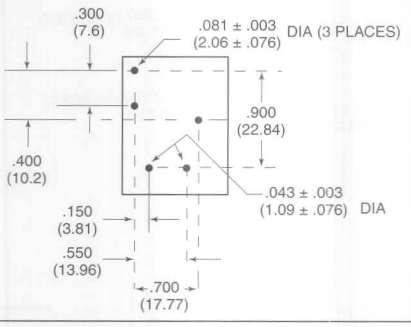
STANDARD RELAYS: 1 Form A (SPST N.O.)					
COIL SPECIFICATIONS				ORDER NUMBER*	
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ±10%	Must Operate VDC	Unsealed	Sealed
5	7.3	27	3.75	AZ2100–1A–5D	AZ2100–1A–5DE
6	8.9	40	4.5	AZ2100–1A–6D	AZ2100–1A–6DE
9	13.9	97	6.75	AZ2100–1A–9D	AZ2100–1A–9DE
12	17.5	155	9.0	AZ2100–1A–12D	AZ2100–1A–12DE
15	22.5	256	11.25	AZ2100–1A–15D	AZ2100–1A–15DE
18	27.4	380	13.5	AZ2100–1A–18D	AZ2100–1A–18DE
24	36.1	660	18.0	AZ2100–1A–24D	AZ2100–1A–24DE
48	68.4	2,560	36.0	AZ2100–1A–48D	AZ2100–1A–48DE
70	104.4	5,500	52.5	AZ2100–1A–70D	AZ2100–1A–70DE
110	163.2	13,450	82.5	AZ2100–1A–110D	AZ2100–1A–110DE
STANDARD RELAYS: 1 Form C (SPDT)					
COIL SPECIFICATIONS				ORDER NUMBER*	
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ±10%	Must Operate VDC	Unsealed	Sealed
5	7.3	27	3.75	AZ2100–1C–5D	AZ2100–1C–5DE
6	8.9	40	4.5	AZ2100–1C–6D	AZ2100–1C–6DE
9	13.9	97	6.75	AZ2100–1C–9D	AZ2100–1C–9DE
12	17.5	155	9.0	AZ2100–1C–12D	AZ2100–1C–12DE
15	22.5	256	11.25	AZ2100–1C–15D	AZ2100–1C–15DE
18	27.4	380	13.5	AZ2100–1C–18D	AZ2100–1C–18DE
24	36.1	660	18.0	AZ2100–1C–24D	AZ2100–1C–24DE
48	68.4	2,560	36.0	AZ2100–1C–48D	AZ2100–1C–48DE
70	104.4	5,500	52.5	AZ2100–1C–70D	AZ2100–1C–70DE
110	163.2	13,450	82.5	AZ2100–1C–110D	AZ2100–1C–110DE

***Substitute "1B" in place of "1A or 1C" to indicate 1 Form B. To indicate Class F version, add suffix "F".**
Other coil resistances and sensitivities available upon request. Please contact the factory.

MECHANICAL DATA

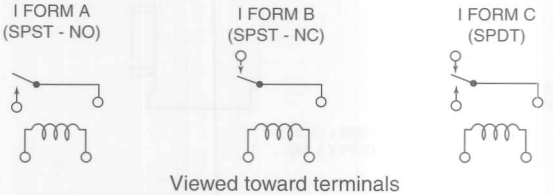


PC BOARD LAYOUT



Viewed toward terminals

WIRING DIAGRAM



Viewed toward terminals

Dimensions in inches with metric equivalents in parentheses. Tolerance: ± .010"

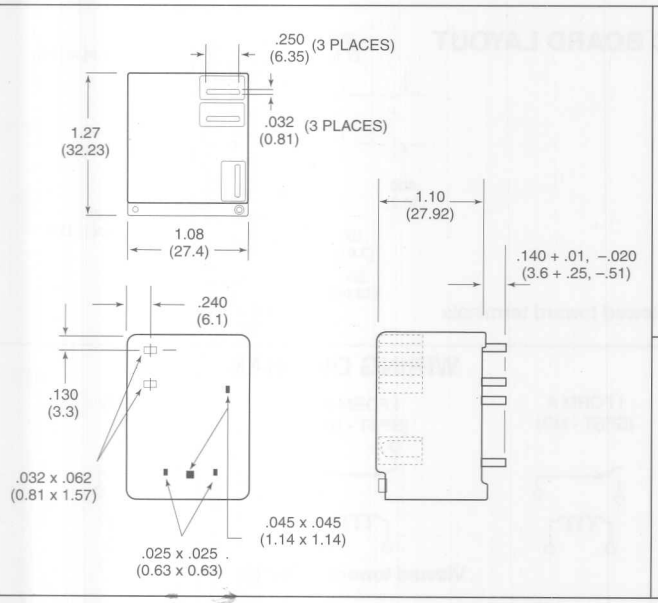
AZ2100

RELAY ORDERING DATA: UL 508 Group B

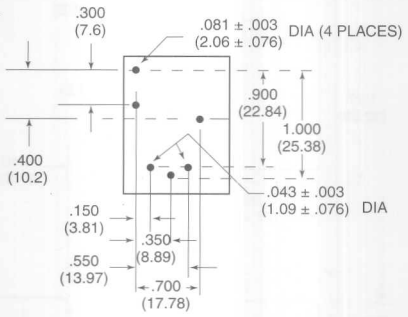
STANDARD RELAYS: 1 Form A (SPST N.O.)					
COIL SPECIFICATIONS				ORDER NUMBER*	
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ±10%	Must Operate VDC	Unsealed	Sealed
5	7.3	27	3.75	AZ2101–1A–5D	AZ2101–1A–5DE
6	8.9	40	4.5	AZ2101–1A–6D	AZ2101–1A–6DE
9	13.9	97	6.75	AZ2101–1A–9D	AZ2101–1A–9DE
12	17.5	155	9.0	AZ2101–1A–12D	AZ2101–1A–12DE
15	22.5	256	11.25	AZ2101–1A–15D	AZ2101–1A–15DE
18	27.4	380	13.5	AZ2101–1A–18D	AZ2101–1A–18DE
24	36.1	660	18.0	AZ2101–1A–24D	AZ2101–1A–24DE
48	68.4	2,560	36.0	AZ2101–1A–48D	AZ2101–1A–48DE
70	104.4	5,500	52.5	AZ2101–1A–70D	AZ2101–1A–70DE
110	163.2	13,450	82.5	AZ2101–1A–110D	AZ2101–1A–110DE
STANDARD RELAYS: 1 Form C (SPDT)					
COIL SPECIFICATIONS				ORDER NUMBER*	
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ±10%	Must Operate VDC	Unsealed	Sealed
5	7.3	27	3.75	AZ2101–1C–5D	AZ2101–1C–5DE
6	8.9	40	4.5	AZ2101–1C–6D	AZ2101–1C–6DE
9	13.9	97	6.75	AZ2101–1C–9D	AZ2101–1C–9DE
12	17.5	155	9.0	AZ2101–1C–12D	AZ2101–1C–12DE
15	22.5	256	11.25	AZ2101–1C–15D	AZ2101–1C–15DE
18	27.4	380	13.5	AZ2101–1C–18D	AZ2101–1C–18DE
24	36.1	660	18.0	AZ2101–1C–24D	AZ2101–1C–24DE
48	68.4	2,560	36.0	AZ2101–1C–48D	AZ2101–1C–48DE
70	104.4	5,500	52.5	AZ2101–1C–70D	AZ2101–1C–70DE
110	163.2	13,450	82.5	AZ2101–1C–110D	AZ2101–1C–110DE

*Substitute "1B" in place of "1A or 1C" to indicate 1 Form B. To indicate Class F version, add suffix "F".
Other coil resistances and sensitivities available upon request. Please contact the factory.

MECHANICAL DATA

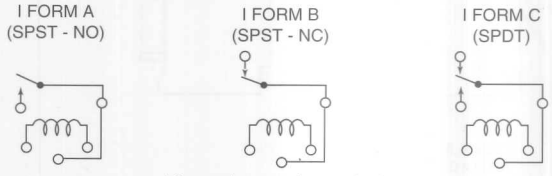


PC BOARD LAYOUT



Viewed toward terminals

WIRING DIAGRAM



Viewed toward terminals

Dimensions in inches with metric equivalents in parentheses. Tolerance: ± .010"

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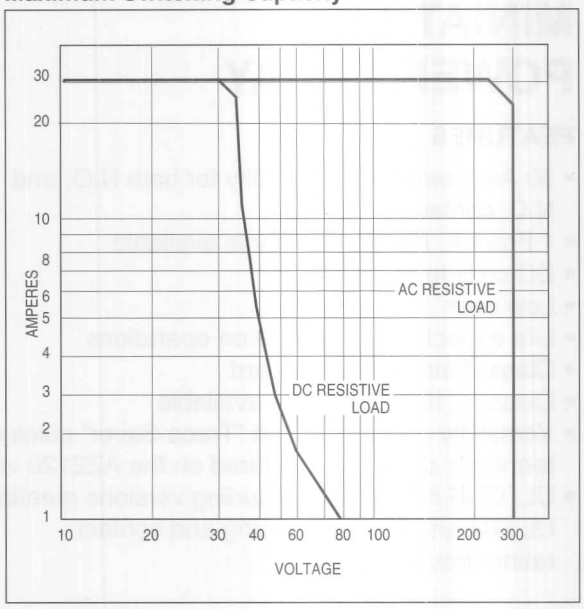
UL/CUR File E44211 Approved Contact Ratings

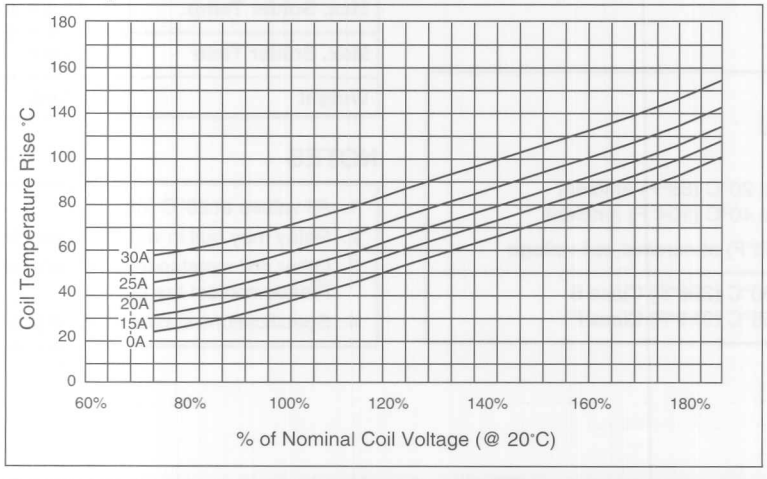
Load Type	Cycles	Volts	Form A (NO)	Form B (NC)	Form C NO	Form C NC
General Purpose (Inductive)	100,000	125 or 240 VAC	30 A	15 A	—	15 A
	30,000	277 VAC	30 A	30 A	30 A	30 A
	25,000	125 or 240 VAC	20 A	15 A	20 A	15 A
	6,000	277 VAC	12 A	6 A	6 A	6 A
Resistive	100,000	125 or 240 VAC	30 A	15 A	—	—
	25,000	125 or 240 VAC	20 A	10 A	20 A	10 A
	6,000	277 VAC	12 A	6 A	12 A	6 A
	100,000	30 VDC	20 A	10 A	20 A	10 A
	100,000	277 VAC	20 A	—	—	—
	100,000 *	240 VAC	15 A	—	—	—
Ballast	6,000	125, 240 or 277 VAC	6 A	3 A	6 A	3 A
Pilot Duty	30,000	125 VAC	800 VA	275 VA	470 VA	275 VA
	30,000	240 VAC	690 VA	275 VA	470 VA	275 VA
	100,000	125 or 277 VAC	690 VA	—	690 VA	—
Motor Load	6,000	125 VAC	1 HP	1/4 HP	1 HP	1/4 HP
	6,000	240 VAC	2 HP	1 HP	2 HP	1 HP
	30,000	125 VAC	1 HP	—	1 HP	—
	100,000	125 or 277 VAC	3/4 HP	—	3/4 HP	—
Definite Purpose	30,000 **	120 VAC	82.8 LRA 13.8 FLA	— —	82.8 LRA 13.8 FLA	— —
	30,000	125 VAC	96 LRA 30 FLA	33 LRA 10 FLA	60 LRA 20 FLA	33 LRA 10 FLA
	30,000 **	125 VAC	60 LRA 20 FLA	30 LRA 12 FLA	60 LRA 20 FLA	30 LRA 12 FLA
(LRA-Locked Rotor)	100,000	125 VAC	82.8 LRA 27 FLA	— —	82.8 LRA 27 FLA	— —
(FLA-Full Load)	30,000	240 VAC	80 LRA 30 FLA	33 LRA 10 FLA	60 LRA 20 FLA	33 LRA 10 FLA
	30,000 **	240 VAC	41.4 LRA 6.9 FLA	— —	41.4 LRA 6.9 FLA	— —
	100,000	277 VAC	60 LRA 20 FLA	— —	60 LRA 20 FLA	— —
Tungsten	6,000 6,000 6,000 6,000	125 VAC 240 VAC 120 VAC 240 VAC	15A 5A — —	— — 3A 3A	15A 5A — —	3A 3A — —
TV–5	25,000	120 VAC	TV–5	—	TV–5	TV–3
TV–3	25,000	120 VAC	—	TV–3	—	TV–3

* Ambient temperature 96°C (208°F) max. sealed and 105°C (221°F) unsealed.
** Ambient temperature 85°C (185°F) max. sealed and unsealed.

Maximum Switching Capacity

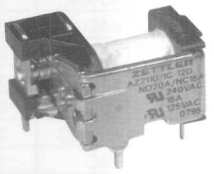


Coil Temperature Rise vs. Coil Power



AZ2110 / AZ2120

MINIATURE POWER RELAY



FEATURES

- 30 Amp switching capability for both N.O. and N.C. contacts
- 1 Form A, B and C contacts available
- DC coils to 120 VDC
- Low cost
- Life expectancy to 10 million operations
- Class B insulation standard
- Class F (155°C) version available
- Versatility of both PC and "Trace Saver" quick-connect terminals on contacts offered on the AZ2120 version
- UL, CUR file E44211 including versions meeting UL 508 and UL 873 spacing and contact rating requirements

CONTACTS

Arrangement	SPDT (1 Form C) SPST (1 Form A and 1 Form B)
Ratings	Resistive load: Max. switched power: 900 W or 7200 VA Max. switched current: 30 A Max. switched voltage: 30 VDC or 300 VAC **UL Rating:** See chart for UL contact ratings. AZ2110 Series meets UL 508 Group A spacing and UL 873 refrigeration and safety control spacing requirements. AZ2111 Series meets UL 508 Group B spacing requirements.
Material	Silver alloy
Resistance	20 milliohms initially (at rated current, voltage drop method)

COIL

Power	
At Pickup Voltage (typical)	500 mW
Max. Continuous Dissipation	2.2 W at 20°C (68°F) ambient 1.8 W at 40°C (104°F) ambient
Temperature Rise	38°C (68°F) at nominal coil voltage
Temperature	Max. 130°C (266°F) Class B Max. 155°C (311°F) Class F

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 1 x 10^6 1 x 10^5 at rated load (N.O.) 3 x 10^4 (N.C.)
Operate Time (max.)	Max. 15 ms (including bounce) Typical: 9 ms (including bounce)
Release Time (max.)	Max. 10 ms (including bounce) Typical: 7 ms (including bounce)
Dielectric Strength (at sea level for 1 min.)	2500 Vrms contact to coil 2000 Vrms between open contacts
Insulation Resistance	1000 megohms min. at 500 VDC, 20°C, 50% RH
Dropout	Greater than 10% of nominal coil voltage
Ambient Temperature **Operating** **Storage**	At nominal coil voltage -55°C (-67°F) to 100°C (212°F) -55°C (-67°F) to 125°C (257°F) -55°C (-67°F) to 130°C (266°F) -55°C (-67°F) to 155°C (311°F)
Vibration	0.062" DA at 10–55 Hz
Shock	20 g
Enclosure (optional)	P.B.T. polyester
Terminals	Tinned copper alloy, P.C. with "Fast-On" tabs, .250" wide, on top
Max. Solder Temp.	270°C (518°F)
Max. Solder Time	5 seconds
Weight	40 grams

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Other coil resistances and sensitivities available upon request. Please contact the factory.
4. Specifications subject to change without notice.

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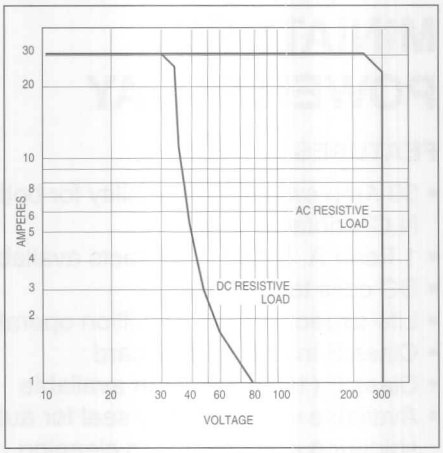
AZ2110 / AZ2120

RELAY ORDERING DATA

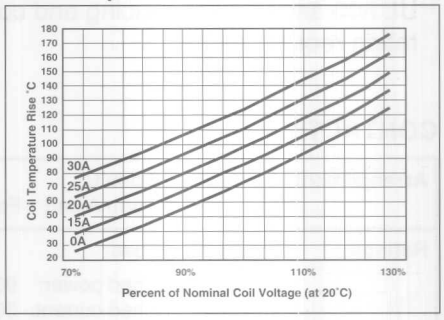
STANDARD RELAYS: UL 508 Group A; UL 873 Version					
COIL SPECIFICATIONS				ORDER NUMBER*	
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ±10%	Must Operate VDC	Form A (SPST)	Form C (SPDT)
5	7.3	27	3.75	AZ2110–1A–5D	AZ2110–1C–5D
6	8.9	40	4.5	AZ2110–1A–6D	AZ2110–1C–6D
9	13.9	97	6.75	AZ2110–1A–9D	AZ2110–1C–9D
12	17.5	155	9.0	AZ2110–1A–12D	AZ2110–1C–12D
15	22.5	256	11.25	AZ2110–1A–15D	AZ2110–1C–15D
18	27.4	380	13.5	AZ2110–1A–18D	AZ2110–1C–18D
24	36.1	660	18.0	AZ2110–1A–24D	AZ2110–1C–24D
48	68.4	2,560	36.0	AZ2110–1A–48D	AZ2110–1C–48D
70	104.4	5,500	52.5	AZ2110–1A–70D	AZ2110–1C–70D
110	163.2	13,450	82.5	AZ2110–1A–110D	AZ2110–1C–110D
STANDARD RELAYS: UL 508 Group B Version					
COIL SPECIFICATIONS				ORDER NUMBER*	
5	7.3	27	3.75	AZ2111–1A–5D	AZ2111–1C–5D
6	8.9	40	4.5	AZ2111–1A–6D	AZ2111–1C–6D
9	13.9	97	6.75	AZ2111–1A–9D	AZ2111–1C–9D
12	17.5	155	9.0	AZ2111–1A–12D	AZ2111–1C–12D
15	22.5	256	11.25	AZ2111–1A–15D	AZ2111–1C–15D
18	27.4	380	13.5	AZ2111–1A–18D	AZ2111–1C–18D
24	36.1	660	18.0	AZ2111–1A–24D	AZ2111–1C–24D
48	68.4	2,560	36.0	AZ2111–1A–48D	AZ2111–1C–48D
70	104.4	5,500	52.5	AZ2111–1A–70D	AZ2111–1C–70D
110	163.2	13,450	82.5	AZ2111–1A–110D	AZ2111–1C–110D

* Substitute "1B" in place of the "1A" to indicate 1 Form B contact. To indicate Class F version, add suffix "F".
For quick connect terminals on contacts substitute "2120" or "2121" in place of "2110" or "2111".

Maximum Switching Capacity



Coil Temperature Rise

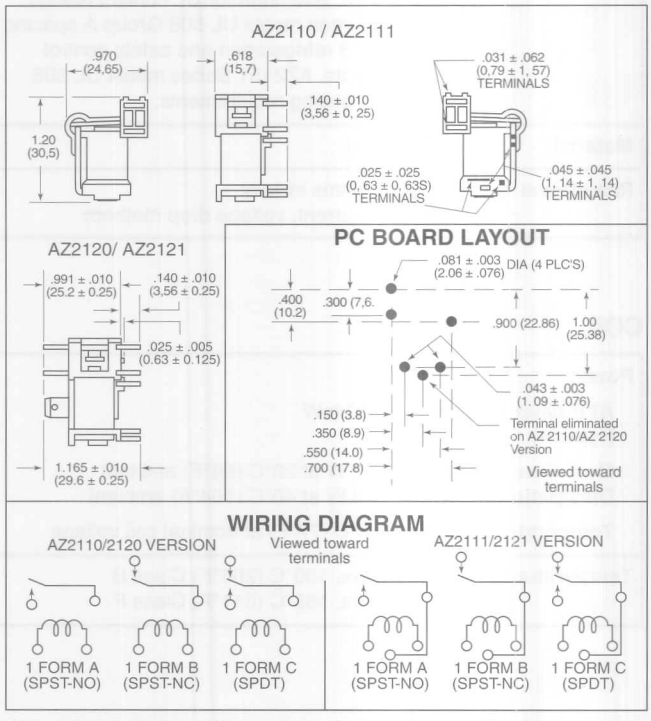


UL/CUR File E44211 Approved Contact Ratings

Load Type	Cycles	Volts	Form A (NO)	Form B (NC)	Form C NO	Form C NC
General Purpose (Inductive)	100,000	125 or 240 VAC	30 A	15 A	—	15 A
	30,000	277 VAC	30 A	30 A	30 A	30 A
	25,000	125 or 240 VAC	20 A	15 A	20 A	15 A
	6,000	277 VAC	12 A	6 A	6 A	6 A
Resistive	100,000	125 or 240 VAC	30 A	15 A	—	—
	25,000	125 or 240 VAC	20 A	10 A	20 A	10 A
	6,000	277 VAC	12 A	6 A	12 A	6 A
	100,000	30 VDC	20 A	10 A	20 A	10 A
	100,000	277 VAC	20 A	—	—	—
	100,000	240 VAC	15 A	—	—	—
Ballast	6,000	277 VAC	6 A	3 A	6 A	3 A
Pilot Duty	30,000	125 VAC	800 VA	275 VA	470 VA	275 VA
	30,000	240 VAC	690 VA	275 VA	470 VA	275 VA
	100,000	125 or 277 VAC	690 VA	—	690 VA	—
Motor Load	6,000	125 VAC	1 HP	1/4 HP	1 HP	1/4 HP
	6,000	240 VAC	2 HP	1 HP	2 HP	1 HP
	30,000	125 VAC	1 HP	—	1 HP	—
	100,000	125 or 277 VAC	3/4 HP	—	3/4 HP	—
Definite Purpose	30,000	125 VAC	96 LRA 30 FLA	33 LRA 10 FLA	60 LRA 20 FLA	33 LRA 10 FLA
(LRA-Locked Rotor)	100,000	125 VAC	82.8 LRA 27 FLA	— —	82.8 LRA 27 FLA	— —
(FLA-Full Load)	30,000	240 VAC	80 LRA 30 FLA	33 LRA 10 FLA	60 LRA 20 FLA	33 LRA 10 FLA
	100,000	277 VAC	60 LRA 20 FLA	— —	60 LRA 20 FLA	— —
Tungsten	6,000	125 VAC	15 A	—	15 A	3 A
	6,000	240 VAC	5 A	—	5 A	3 A
	6,000	120 VAC	—	3 A	—	—
	6,000	240 VAC	—	3 A	—	—
TV–5	25,000	120 VAC	TV–5	—	TV–5	TV–3
TV–3	25,000	120 VAC	—	TV–3	—	TV–3

Note: See AZ2100 Data Sheet for more complete UL and CUR approved contact ratings.

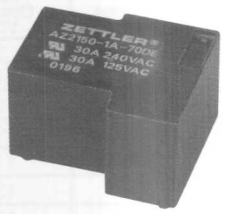
MECHANICAL DATA



Dimensions in inches with metric equivalents in parentheses.
Tolerance: ± .010"

AZ2150

MINIATURE POWER RELAY



FEATURES

- 30 Amp switching capability for both N.O. and N.C. contacts
- 1 Form A, B and C contacts available
- DC coils to 120 VDC
- Life expectancy to 10 million operations
- Class B insulation standard
- Class F (155°C) version available
- Available with an epoxy seal for automatic wave soldering and immersion cleaning
- UL, CUR file E44211 including versions meeting UL 508 and UL 873 spacing and contact rating requirements

CONTACTS

Arrangement	SPDT (1 Form C) SPST (1 Form A and 1 Form B)
Ratings	Resistive load: Max. switched power: 900 W or 7200 VA Max. switched current: 30 A Max. switched voltage: 30 VDC or 300 VAC **UL Rating:** See chart for UL contact ratings. AZ2150 Series meets UL 508 Group A spacing and UL 873 refrigeration and safety control requirements. AZ2151 Series meets UL 508 Group B spacing requirements.
Material	Silver alloy
Resistance	< 20 milliohms initially (at rated current, voltage drop method)

COIL

Power	
At Pickup Voltage (typical)	500 mW
Max. Continuous Dissipation	2.2 W at 20°C (68°F) ambient 1.8 W at 40°C (104°F) ambient
Temperature Rise	43°C (77°F) at nominal coil voltage
Temperature	Max. 130°C (266°F) Class B Max. 155°C (311°F) Class F

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 1 x 10^7 1 x 10^5 at rated load (N.O.) 3 x 10^4 (N.C.)
Operate Time	Max. 15 ms (including bounce) Typical: 9 ms (including bounce)
Release Time	Max. 10 ms (including bounce) Typical: 7 ms (including bounce)
Dielectric Strength (at sea level for 1 min.)	2500 Vrms contact to coil 1500 Vrms between open contacts
Insulation Resistance	1000 megohms min. at 500 VDC, 20°C 50% RH
Dropout	Greater than 10% of nominal coil voltage
Ambient Temperature **Operating** **Storage**	At nominal coil voltage -55°C (-67°F) to 100°C (212°F) Class B -55°C (-67°F) to 125°C (257°F) Class F -55°C (-67°F) to 130°C (266°F) Class B -55°C (-67°F) to 155°C (311°F) Class F
Vibration	0.062" DA at 10–55 Hz
Shock	20 g
Enclosure	P.B.T. polyester
Terminals	Tinned copper alloy
Max. Solder Temp.	270°C (518°F)
Max. Solder Time	5 seconds
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 seconds
Weight	25 grams

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Unsealed relays should not be dip cleaned.
4. Other coil resistances and sensitivities available upon request. Please call the factory.
5. Specifications subject to change without notice.

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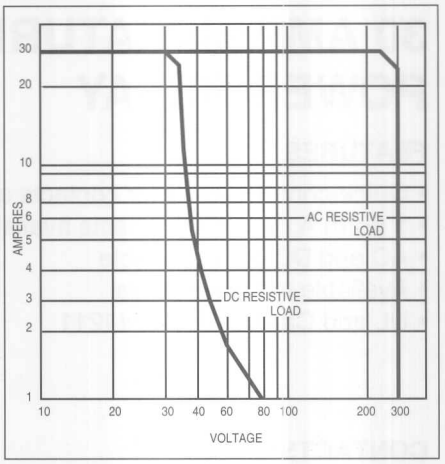
RELAY ORDERING DATA

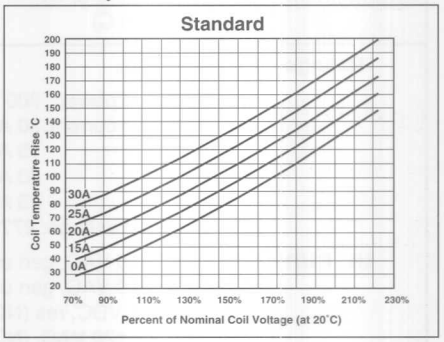
STANDARD RELAYS: 1 Form A (SPST); 508 Group A; UL 873 Version					
COIL SPECIFICATIONS				ORDER NUMBER*	
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance ±10%	Must Operate VDC	Unsealed	Sealed
5	7.3	27	3.75	AZ2150–1A–5D	AZ2150–1A–5DE
6	8.9	40	4.5	AZ2150–1A–6D	AZ2150–1A–6DE
9	13.9	97	6.75	AZ2150–1A–9D	AZ2150–1A–9DE
12	17.5	155	9.0	AZ2150–1A–12D	AZ2150–1A–12DE
15	22.5	256	11.25	AZ2150–1A–15D	AZ2150–1A–15DE
18	27.4	380	13.5	AZ2150–1A–18D	AZ2150–1A–18DE
24	36.1	660	18.0	AZ2150–1A–24D	AZ2150–1A–24DE
48	68.4	2,560	36.0	AZ2150–1A–48D	AZ2150–1A–48DE
70	104.4	5,500	52.5	AZ2150–1A–70D	AZ2150–1A–70DE
110	163.2	13,450	82.5	AZ2150–1A–110D	AZ2150–1A–110DE
STANDARD RELAYS: 1 Form A (SPST); UL 508 Group B Version					
COIL SPECIFICATIONS				ORDER NUMBER*	
5	7.3	27	3.75	AZ2151–1A–5D	AZ2151–1A–5DE
6	8.9	40	4.5	AZ2151–1A–6D	AZ2151–1A–6DE
9	13.9	97	6.75	AZ2151–1A–9D	AZ2151–1A–9DE
12	17.5	155	9.0	AZ2151–1A–12D	AZ2151–1A–12DE
15	22.5	256	11.25	AZ2151–1A–15D	AZ2151–1A–15DE
18	27.4	380	13.5	AZ2151–1A–18D	AZ2151–1A–18DE
24	36.1	660	18.0	AZ2151–1A–24D	AZ2151–1A–24DE
48	68.4	2,560	36.0	AZ2151–1A–48D	AZ2151–1A–48DE
70	104.4	5,500	52.5	AZ2151–1A–70D	AZ2151–1A–70DE
110	163.2	13,450	82.5	AZ2151–1A–110D	AZ2151–1A–110DE

* Substitute "1B" or "1C" in place of the "1A" to indicate 1 Form B and 1 Form C respectively.To indicate Class F version, add suffix "F".

Maximum Switching Capacity



Coil Temperature Rise

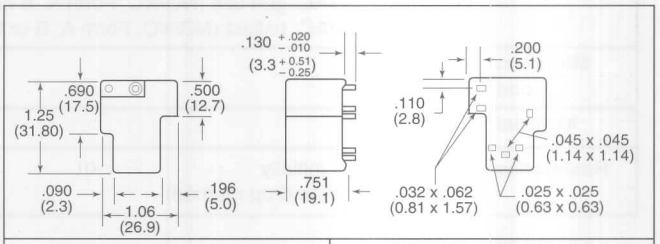


UL/CUR File E44211 Approved Contact Ratings

Load Type	Cycles	Volts	Form A (NO)	Form B (NC)	Form C NO	Form C NC
General Purpose	100,000	125 or 240 VAC	30 A	15 A	—	15 A
(Inductive)	30,000	277 VAC	30 A	30 A	30 A	30 A
	25,000	125 or 240 VAC	20 A	15 A	20 A	15 A
	6,000	277 VAC	12 A	6 A	6 A	6 A
Resistive	100,000	125 or 240 VAC	30 A	15 A	—	—
	25,000	125 or 240 VAC	20 A	10 A	20 A	10 A
	6,000	277 VAC	12 A	6 A	12 A	6 A
	100,000	30 VDC	20 A	10 A	20 A	10 A
	100,000	277 VAC	20 A	—	—	—
	100,000	240 VAC	15 A	—	—	—
Ballast	6,000	277 VAC	6 A	3 A	6 A	3 A
Pilot Duty	30,000	125 VAC	800 VA	275 VA	470 VA	275 VA
	30,000	240 VAC	690 VA	275 VA	470 VA	275 VA
	100,000	125 or 277 VAC	690 VA	—	690 VA	—
Motor Load	6,000	125 VAC	1 HP	1/4 HP	1 HP	1/4 HP
	6,000	240 VAC	2 HP	1 HP	2 HP	1 HP
	30,000	125 VAC	1 HP	—	1 HP	—
	100,000	125 or 277 VAC	3/4 HP	—	3/4 HP	—
Definite Purpose	30,000	125 VAC	96 LRA 30 FLA	33 LRA 10 FLA	60 LRA 20 FLA	33 LRA 10 FLA
(LRA-Locked Rotor)	100,000	125 VAC	82.8 LRA 27 FLA	— —	82.8 LRA 27 FLA	— —
(FLA-Full Load)	30,000	240 VAC	80 LRA 30 FLA	33 LRA 10 FLA	60 LRA 20 FLA	33 LRA 10 FLA
	100,000	277 VAC	60 LRA 20 FLA	— —	60 LRA 20 FLA	— —
Tungsten	6,000	125 VAC	15 A	—	15 A	3 A
	6,000	240 VAC	5 A	—	5 A	3 A
	6,000	120 VAC	—	3 A	—	—
	6,000	240 VAC	—	3 A	—	—
TV–5	25,000	120 VAC	TV–5	—	TV–5	TV–3
TV–3	25,000	120 VAC	—	TV–3	—	TV–3

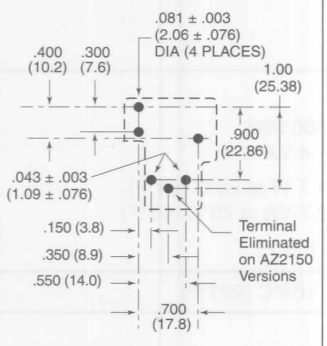
Note: See AZ2100 Data Sheet for more complete UL and CUR approved contact ratings.

MECHANICAL DATA



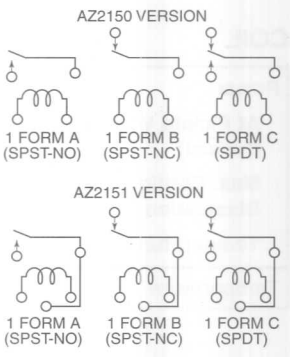
PC BOARD LAYOUT

Viewed toward terminals



WIRING DIAGRAM

Viewed toward terminals



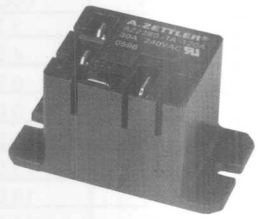
Dimensions in inches with metric equivalents in parentheses.
Tolerance: ± .010"

AZ2280

30 AMP MINIATURE POWER RELAY

FEATURES

- Quick-connect leads for contacts and coil
- 1 Form A, B and C contacts available
- AC and DC coils available
- Available with epoxy seal
- UL and Canadian file E44211



CONTACTS

Arrangement	SPST (1 Form A, or B) SPDT (1 Form C)
Ratings	Resistive load: Max. switched power: 900 W or 7200 VA Max. switched current: 30 A (Form A N.O.) 15 A (Form B N.O.) 20 A (Form C N.O.) 15 A (Form C N.O. Max. switched voltage: 277 VAC, 30 VDC
UL, CUR	30/15 A @ 240 VAC, gen use (NO/NC, Form A or B) 20/10 A @ 240 VAC, gen use (NO/NC, Form C) 20/10 A @ 28 VDC, res (NO/NC, Form A, B or C) 1.0/.25 Hp @ 120 VAC, (NO/NC, Form A or B) 2.0/.50 Hp @ 240 VAC, (NO/NC, Form A or B) 5/3 A @ 240 VAC, tungsten (NO/NC, Form A, B or C) 6/3 A @ 277 VAC, gen use (NO/NC, Form A, B or C) 6/3 A @ 277 VAC, ballast (NO/NC, Form A, B or C)
Minimum Load	5 VDC, 0.1 A
Material	Silver alloy
Resistance	< 50 milliohms initially (24 V, 1 A voltage drop method)

COIL

Power	
At Pickup Voltage (typical)	DC: 500 mW AC: 1.4 VA
Max. Continuous Dissipation	DC: 1.7 W at 20°C (68°F) AC: 2.7 VA at 20°C (68°F)
Temperature Rise	38°C (68°F)
Temperature	Max. 105°C (221°F)

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 1 x 10^7 1 x 10^5 at rated load
Operate Time	15 ms at nominal coil voltage
Release Time	10 ms at nominal coil voltage (with no coil suppression)
Dielectric Strength (at sea level for 1 min.)	1500 Vrms contact to contact 2500 Vrms contact to coil
Insulation Resistance	1000 megohms min. at 500 VDC, 20°C 50% RH
Dropout	DC: Greater than 10% of nominal coil voltage AC: Greater than 20% of nominal coil voltage
Ambient Temperature **Operating** **Storage**	At nominal coil voltage -55°C (-67°F) to 85°C (185°F) -55°C (-67°F) to 105°C (221°F)
Vibration	0.062" DA at 10–55 Hz
Shock	10 g
Enclosure	P.B.T. polyester
Terminals	Tinned copper alloy, Quick Connects
Max. Solder Temp.	270°C (518°F)
Max. Solder Time	5 seconds
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 seconds
Weight	36 grams

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Specifications subject to change without notice.

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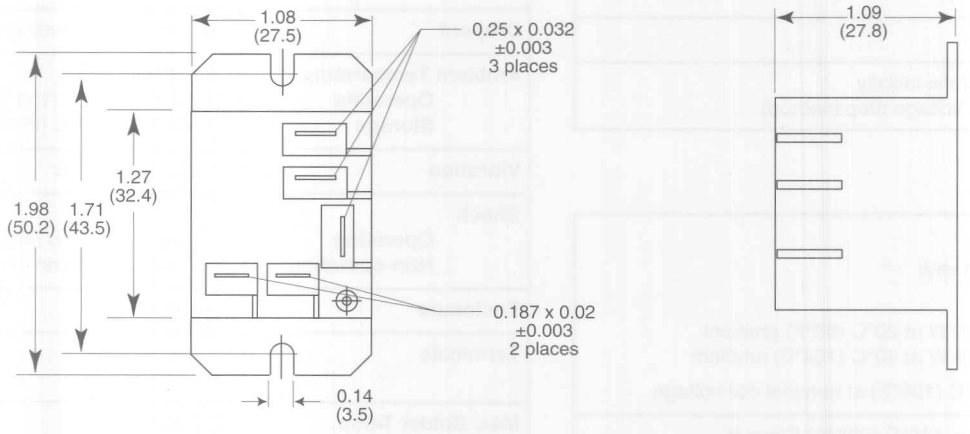
RELAY ORDERING DATA

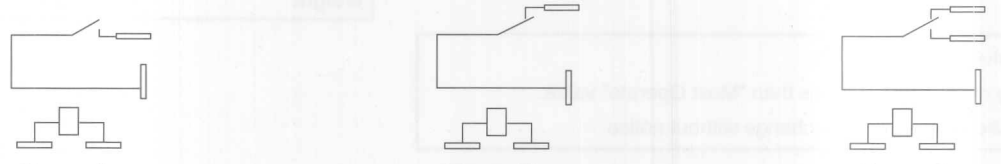
COIL SPECIFICATIONS – DC Coil					ORDER NUMBER*
Nominal Coil VDC	Must Operate VDC	Max. Continuous VDC	Nominal Current mA ± 10%	Coil Resistance ± 10%	
5	3.75	6.4	185	27	AZ2280–1A–5D
6	4.50	7.8	150	40	AZ2280–1A–6D
9	6.75	12.2	93	97	AZ2280–1A–9D
12	9.00	15.4	77	155	AZ2280–1A–12D
15	11.25	19.8	59	256	AZ2280–1A–15D
18	13.5	24.1	47	380	AZ2280–1A–18D
24	18.00	32.0	36	660	AZ2280–1A–24D
48	36.00	62.6	19	2560	AZ2280–1A–48D
COIL SPECIFICATIONS – AC Coil					**ORDER NUMBER***
Nominal Coil VAC	Must Operate VAC	Max. Continuous VAC	Nominal Coil Power VA	Coil Resistance ± 10%	
12	10.2	13.8	2.0	25	AZ2280–1A–12A
24	20.4	27.6	2.0	100	AZ2280–1A–24A
120	102.0	138.0	2.0	2,500	AZ2280–1A–120A
208	176.8	276.0	1.5	11,000	AZ2280–1A–208A
240	204.0	276.0	2.0	11,000	AZ2280–1A–240A
277	235.4	318.5	2.0	14650	AZ2280-1A-277A

*Add suffix "E" for epoxy sealed version. Substitute "1B" or "1C" for 1 form B or 1 form C.

MECHANICAL DATA



WIRING DIAGRAM (Top View)



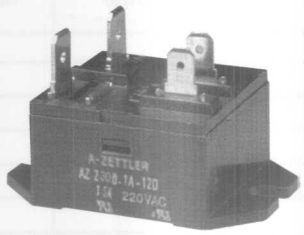
Dimensions in inches with metric equivalents in parentheses. Tolerance: ± .010"

AZ2300

20 AMP MINIATURE POWER RELAY

FEATURES

- Low cost
- 20 Amp switching
- 55 Amp inrush current
- Class B insulation system
- Quick-connect terminals
- UL and Canadian file E44211



CONTACTS

Arrangement	SPST (1 Form A) SPDT (1 Form C)
Ratings	Resistive load: Max. switched power: 450 W or 3300 VA Max. switched current: 20 A Max. switched voltage: 150* VDC or 400 VAC * If switching voltage is greater than 30 VDC, special precautions must be taken. Please contact the factory.
UL, CUR	NO: 15 A at 220 VAC (100 k operations) NC: 10 A at 220 VAC (100 k operations)
Minimum Load	5 VDC, 0.1 A
Material	Silver alloy
Resistance	< 50 milliohms initially (24 V, 1 A voltage drop method)

COIL

Power	
At Pickup Voltage (typical)	441 mW
Max. Continuous Dissipation	1.65 W at 20°C (68°F) ambient 1.35 W at 40°C (104°F) ambient
Temperature Rise	60°C (108°F) at nominal coil voltage
Temperature	Max. 130°C (266°F) Class B

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Specifications subject to change without notice.

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 1 x 10^7 1 x 10^5 at rated load
Operate Time (typical)	15 ms at nominal coil voltage
Release Time (typical)	10 ms at nominal coil voltage (with no coil suppression)
Dielectric Strength (at sea level for 1 min.)	2000 Vrms coil to contact 500 Vrms between open contacts
Insulation Resistance	1000 megohms min. at 500 VDC, 20°C 50% RH
Dropout	Greater than 10% of nominal coil voltage
Ambient Temperature **Operating** **Storage**	At nominal coil voltage -40°C (-40°F) to 70°C (158°F) -40°C (-40°F) to 130°C (266°F)
Vibration	0.062" DA at 10–55 Hz
Shock **Operating** **Non-operating**	 20 g, 11 ms 1/2 sine (no false operation) 100 g, 11 ms 1/2 sine (no damage)
Enclosure	P.B.T. polyester
Terminals	Tinned copper alloy Quick-connect
Max. Solder Temp.	270°C (518°F)
Max. Solder Time	5 seconds
Weight	40 grams

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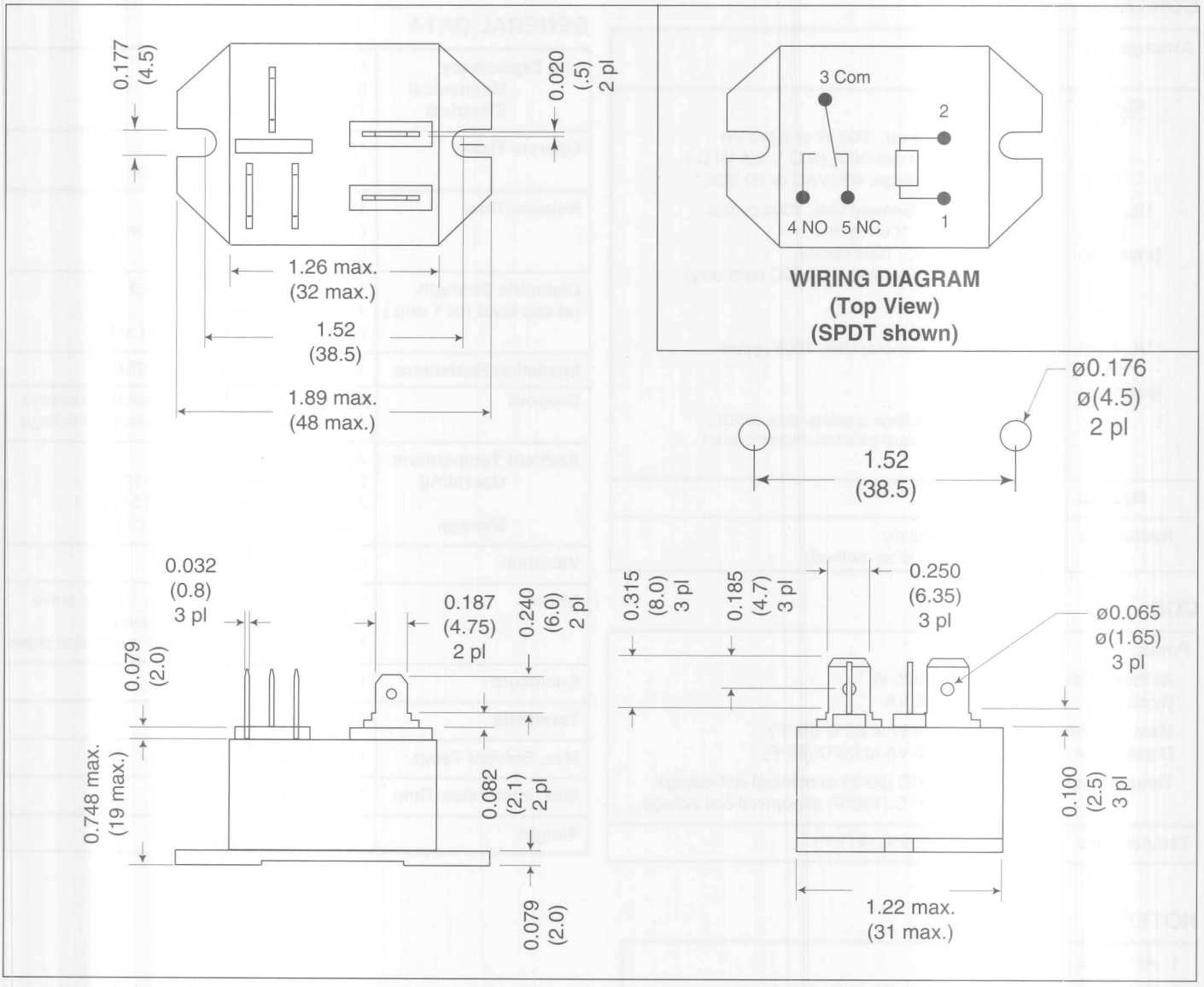
RELAY ORDERING DATA

COIL SPECIFICATIONS				ORDER NUMBER	
Nominal Coil VDC	Must Operate VDC	Max. Continuous VDC	Coil Resistance ±10%	Form A	Form C
6	4.2	8.0	40	AZ2300–1A–6D	AZ2300–1C–6D
12	8.4	16.2	160	AZ2300–1A–12D	AZ2300–1C–12D
24	16.8	32.0	640	AZ2300–1A–24D	AZ2300–1C–24D
48	33.6	64.0	2,560	AZ2300–1A–48D	AZ2300–1C–48D

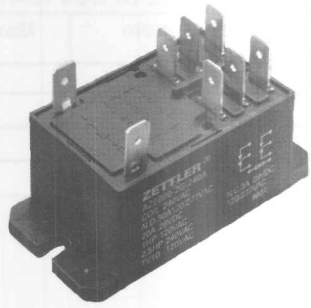
MECHANICAL DATA



Dimensions in inches with metric equivalents in parentheses. Tolerance: ± .010"

AZ2800

30 AMP MINIATURE POWER RELAY



FEATURES

- 30 Amp switching capability
- DPST-NO and DPDT configuration
- Meets 8 mm creepage, 4 Kv dielectric
- Meets Class F construction
- Epoxy sealed version available
- UL/CUR file pending

CONTACTS

Arrangement	DPST-N.O. DPDT
Ratings	Resistive load: Max. switched power: 560 W or 8310 VA Max. switched current: 30 A (N.O.), 3 A (N.C.) Max. switched voltage: 400 VAC or 30 VDC*
UL, CUR (N.O.) (pending)	30 A at 277 VAC General Use, 100k cycles 1 Hp at 120 VAC, 100k cycles 2.5 Hp at 240 VAC, 100k cycles 110 LRA/25.3 FLA at 240 VAC (DC coils only), 100k cycles TV-10 at 120 VAC
UL, CUR (N.C.) (pending)	3 A at 277 VAC General Use, 100k cycles
	*Note: If switching voltage is greater than 30VDC, special precautions must be taken. Please contact the factory.
Material	Silver alloy
Resistance	<50 milliohms initially (6 V, 1 A voltage drop method)

COIL

Power	
At Pickup Voltage (typical)	DC: 0.925 W AC: 2.6 VA
Max. Continuous Dissipation	DC: 5.0 W at 20°C (68°F) AC: 7.0 VA at 20°C (68°F)
Temperature Rise	DC: 48°C (86°F) at nominal coil voltage AC: 68° C (122°F) at nominal coil voltage
Temperature	Max. 155°C (311°F)

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 5×10^7 1×10^5 at rated load
Operate Time	15 ms typical 25 ms maximum with bounce
Release Time	10 ms typical 25 ms maximum with bounce (with no coil suppression)
Dielectric Strength (at sea level for 1 min.)	1500 Vrms contact to contact 4000 Vrms contact to coil 2000 Vrms between contact sets
Insulation Resistance	10^9 ohms minimum at 500 VDC
Dropout	DC: Greater than 10% of nominal coil voltage AC: Greater than 20% of nominal coil voltage
Ambient Temperature **Operating** **Storage**	At nominal coil voltage DC: -40°C (-40°F) to 85°C (185°F) AC: -40°C (-40°F) to 65°C (149°F) -40°C (-40°F) to 155°C (311°F)
Vibration	0.062" DA at 10–55 Hz
Shock	Operational, 10 g for 11 ms 1/2 sine pulse (no contact opening > 100usec) Non-destructive, 100 g for 11 ms 1/2 sine pulse
Enclosure	P.B.T. polyester
Terminals	Quick connect tabs
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 seconds
Weight	86 grams

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Specifications subject to change without notice.

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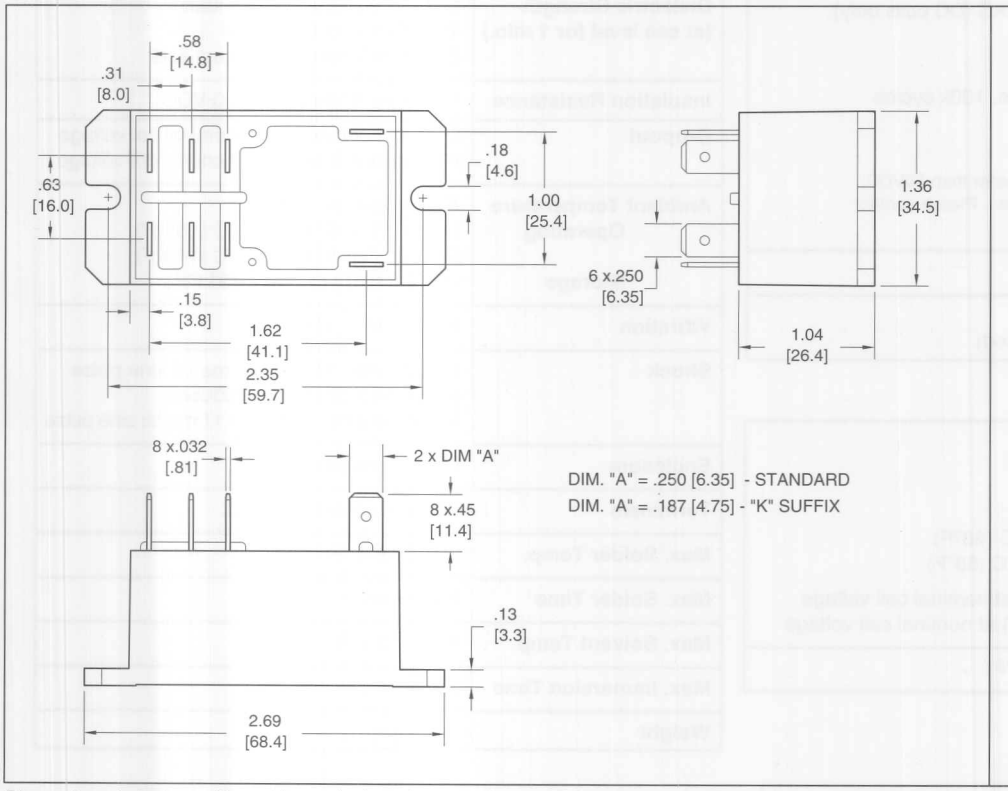
RELAY ORDERING DATA

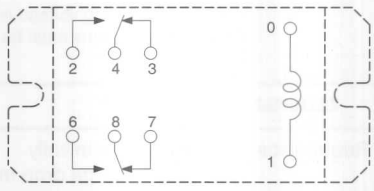
COIL SPECIFICATIONS – DC Coil				ORDER NUMBER*
Nominal Coil VDC	Must Operate VDC	Max. Continuous VDC	Coil Resistance ± 10%	
6	4.5	10.5	22	AZ2800–2C–6D
12	9.0	20.7	86	AZ2800–2C–12D
24	18.0	41.8	350	AZ2800–2C–24D
48	36.0	83.4	1390	AZ2800–2C–48D
110	82.5	190.5	7255	AZ2800–2C–110D
COIL SPECIFICATIONS – AC Coil				**ORDER NUMBER***
Nominal Coil VAC	Must Operate VAC	Max. Continuous VAC	Coil Resistance ± 10%	
24	19.2	31.2	39	AZ2800–2C–24A
120	96.0	156.0	95	AZ2800–2C–120A
208	166.4	270.4	2841	AZ2800–2C–208A
240	192.0	312.0	3800	AZ2800–2C–240A
277	221.6	360.1	5200	AZ2800–2C–277A

*Add suffix "E" for epoxy sealed version. Add suffix "K" for 0.187 QC coil terminals. Substitute "2A" for "2C" to indicate DPST (N.O.) contacts.

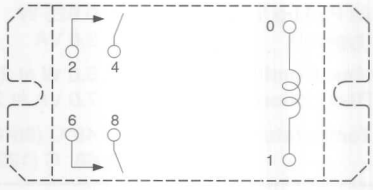
MECHANICAL DATA



WIRING DIAGRAM



2 FORM C



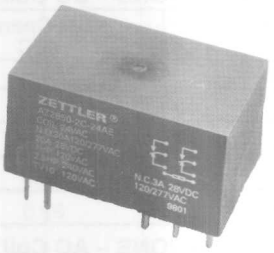
2 FORM A

VIEWED TOWARD TERMINALS

Dimensions in inches with metric equivalents in parentheses. Tolerance: ± .010"

AZ2850

30 AMP MINIATURE POWER RELAY



FEATURES

- 30 Amp switching capability
- DPST-NO and DPDT configuration
- Meets 8 mm creepage, 4 Kv dielectric
- Meets Class F construction
- PCB terminals
- Epoxy sealed version available
- UL/CUR file pending

CONTACTS

Arrangement	DPST-N.O. DPDT
Ratings	Resistive load: Max. switched power: 560 W or 8310 VA Max. switched current: 30 A (N.O.), 3 A (N.C.) Max. switched voltage: 400 VAC or 30 VDC*
UL, CUR (N.O.) (pending)	30 A at 277 VAC General Use, 100k cycles 1 Hp at 120 VAC, 100k cycles 2.5 Hp at 240 VAC, 100k cycles 110 LRA/25.3 FLA at 240 VAC (DC coils only), 100k cycles TV-10 at 120 VAC
UL, CUR (N.C.) (pending)	3 A at 277 VAC General Use, 100k cycles
	*Note: If switching voltage is greater than 30VDC, special precautions must be taken. Please contact the factory.
Material	Silver alloy
Resistance	<50 milliohms initially (6 V, 1 A voltage drop method)

COIL

Power	
At Pickup Voltage (typical)	DC: 0.925 W AC: 2.6 VA
Max. Continuous Dissipation	DC: 5.0 W at 20°C (68°F) AC: 7.0 VA at 20°C (68°F)
Temperature Rise	DC: 48°C (86°F) at nominal coil voltage AC: 68° C (122°F) at nominal coil voltage
Temperature	Max. 155°C (311°F)

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Specifications subject to change without notice.

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 5×10^7 1×10^5 at rated load
Operate Time	15 ms typical 25 ms maximum with bounce
Release Time	10 ms typical 25 ms maximum with bounce (with no coil suppression)
Dielectric Strength (at sea level for 1 min.)	1500 Vrms contact to contact 4000 Vrms contact to coil 2000 Vrms between contact sets
Insulation Resistance	10^9 ohms minimum at 500 VDC
Dropout	DC: Greater than 10% of nominal coil voltage AC: Greater than 20% of nominal coil voltage
Ambient Temperature **Operating** **Storage**	At nominal coil voltage DC: -40°C (-40°F) to 85°C (185°F) AC: -40°C (-40°F) to 65°C (149°F) -40°C (-40°F) to 155°C (311°F)
Vibration	0.062" DA at 10–55 Hz
Shock	Operational, 10 g for 11 ms 1/2 sine pulse (no contact opening > 100usec) Non-destructive, 100 g for 11 ms 1/2 sine pulse
Enclosure	P.B.T. polyester
Terminals	Tinned copper alloy, P.C.
Max. Solder Temp.	270°C (518°F)
Max. Solder Time	5 seconds
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 seconds
Weight	86 grams

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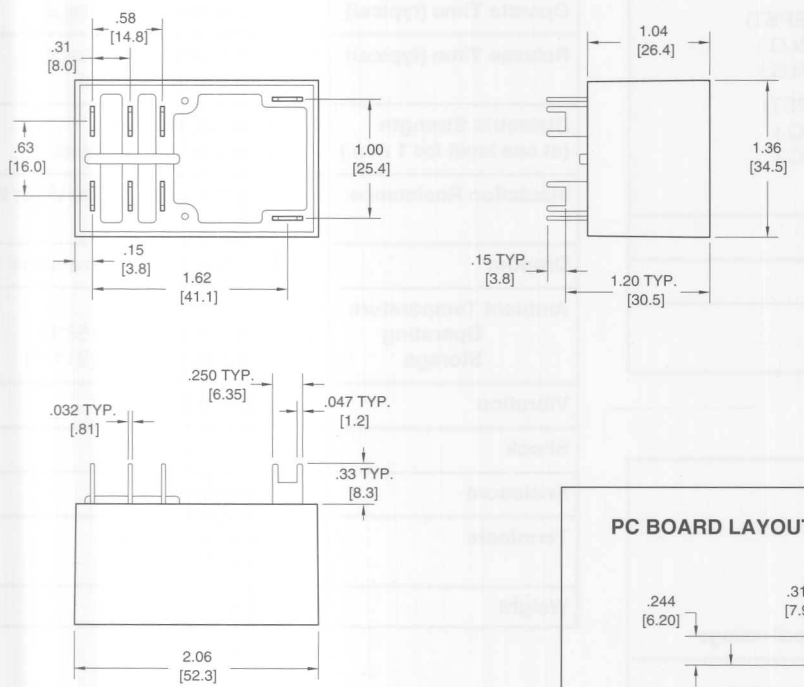
RELAY ORDERING DATA

COIL SPECIFICATIONS – DC Coil				ORDER NUMBER*
Nominal Coil VDC	Must Operate VDC	Max. Continuous VDC	Coil Resistance ± 10%	
6	4.5	10.5	22	AZ2850–2C–6D
12	9.0	20.7	86	AZ2850–2C–12D
24	18.0	41.8	350	AZ2850–2C–24D
48	36.0	83.4	1390	AZ2850–2C–48D
110	82.5	190.5	7255	AZ2850–2C–110D
COIL SPECIFICATIONS – AC Coil				**ORDER NUMBER***
Nominal Coil VAC	Must Operate VAC	Max. Continuous VAC	Coil Resistance ± 10%	
24	19.2	31.2	39	AZ2850–2C–24A
120	96.0	156.0	95	AZ2850–2C–120A
208	166.4	270.4	2841	AZ2850–2C–208A
240	192.0	312.0	3800	AZ2850–2C–240A
277	221.6	360.1	5200	AZ2850–2C–277A

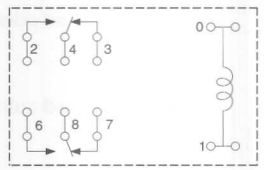
*Add suffix "E" for epoxy sealed version. Substitute "2A" for "2C" to indicate DPST (N.O.) contacts.

MECHANICAL DATA

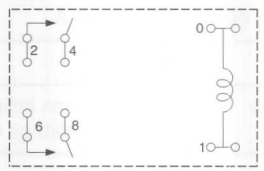
MECHANICAL DATA



WIRING DIAGRAM



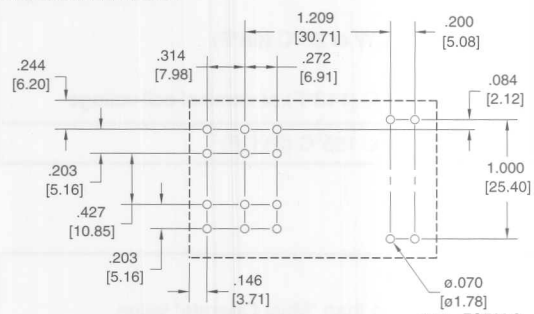
2 FORM C



2 FORM A

VIEWED TOWARD TERMINALS

PC BOARD LAYOUT



FORM C SHOWN
VIEWED TOWARD TERMINALS

Dimensions in inches with metric equivalents in parentheses. Tolerance: ± .010"

AZ9721

40 AMP AUTOMOTIVE RELAY

FEATURES

- 40 Amp contact rating
- High momentary carry current (60A)
- SPST (1 Form A), SPDT (1 Form C)
- Quick connect terminals
- Metal or plastic mounting bracket available
- Resistor or diode parallel to coil available

CONTACTS

Arrangement	SPST (1 Form A) SPDT (1 Form C)
Ratings	Resistive load: Max. switched power: 480 W (SPST) 480 W (N.O.) 360 W (N.C.) Max. switched current: 40 A (SPST) 40 A (N.O.) 30 A (N.C.) Max. switched voltage: 75 VDC
Minimum Load	5 VDC, 0.1 A
Material	Silver alloy
Resistance	< 50 milliohms initially (24 V, 1 A voltage drop method)

COIL

Power	
At Pickup Voltage (typical)	0.76 W
Max. Continuous Dissipation	4.0 W at 20°C (68°F)
Temperature Rise	63°C (113°F) at nominal coil voltage
Temperature	Max. 155°C (311°F)

GENERAL DATA

Life Expectancy **Mechanical** **Electrical**	Minimum operations 1 x 10^7 1 x 10^5 at rated load
Operate Time (typical)	10 ms at nominal coil voltage
Release Time (typical)	10 ms at nominal coil voltage (with no coil suppression)
Dielectric Strength (at sea level for 1 min.)	750 Vrms coil to contact 750 Vrms contact to contact
Insulation Resistance	100 megohms min. at 500 VDC, 20°C 50% RH
Dropout	Greater than 10% of nominal coil voltage
Ambient Temperature **Operating** **Storage**	 -55°C (-67°F) to 70°C (158°F) -55°C (-67°F) to 155°C (311°F)
Vibration	0.062" DA at 20-200 Hz
Shock	20 g
Enclosure	P.B.T. polyester
Terminals	Copper alloy 0.25 Quick Connect
Weight	40 grams

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Specifications subject to change without notice.

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COIL SPECIFICATIONS

Nominal Coil VDC	Must Operate VDC	Max. Continuous VDC	Coil Resistance ± 10%
12	7.8	17.8	80
24	17.0	36.0	320

RELAY ORDERING DATA

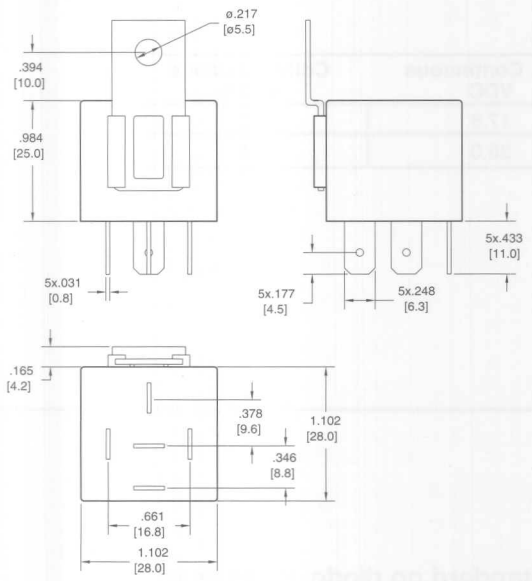
AZ9721-1C-12DC2R1

- Blank - Standard no diode, no resistor
- R1 - 680 Ohm, fi w resistor in parallel with 12 V coil
  2700 Ohm fi w resistor in parallel with 24 V coil
- R2 - 820 Ohm, fi w resistor in parallel with 12 V coil
  3200 Ohm fi w resistor in parallel with 24 V coil
- D1 - 1N4007 diode in parallel with coil, anode on #85 terminal
- D2 - 1N4007 diode in parallel with coil, cathode on #85 terminal
- D3 - 1N4004 diode in parallel with coil, anode on #85 terminal
- D4 - 1N4004 diode in parallel with coil, cathode on #85 terminal
- C1 - Plastic dust cover with steel mounting bracket
- C2 - Plastic dust cover with plastic mounting bracket
- C3 - Plastic dust cover
- 24D - 24 volt coil
- 12D - 12 volt coil
- 1A - SPNO Single pole normally open
- 1C - SPDT Single pole double throw
- Basic series designation - AZ9721

AZ9721

MECHANICAL DATA

AZ9721-C1



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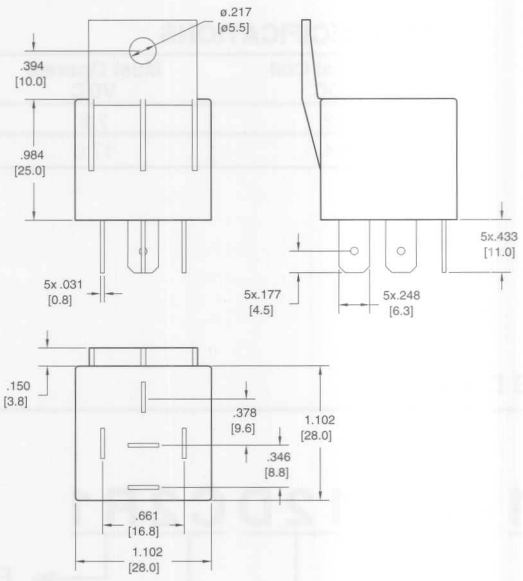

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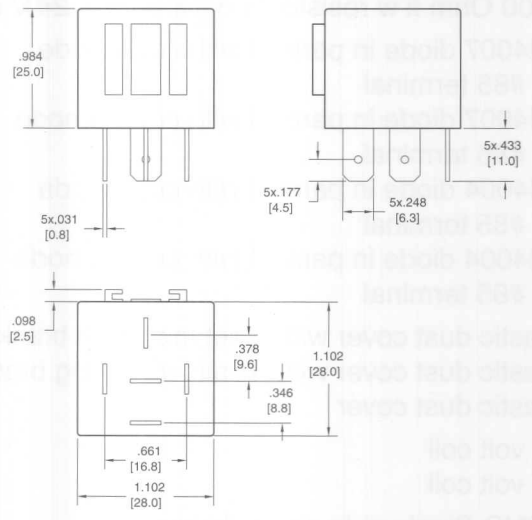
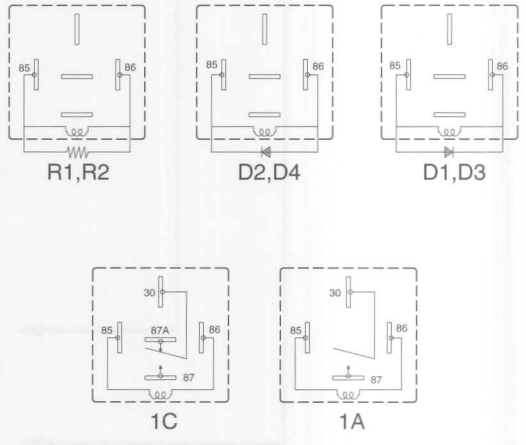


Wiring Diagram



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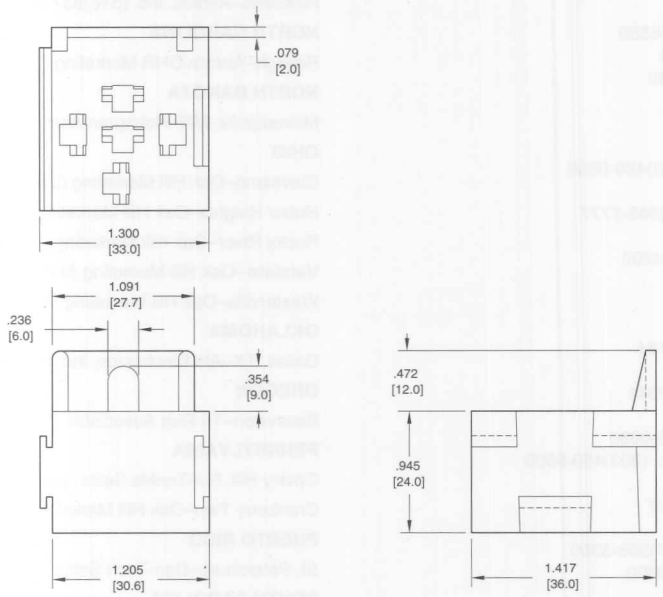
Sockets & Hardware for AZ9721

ST9721-U1



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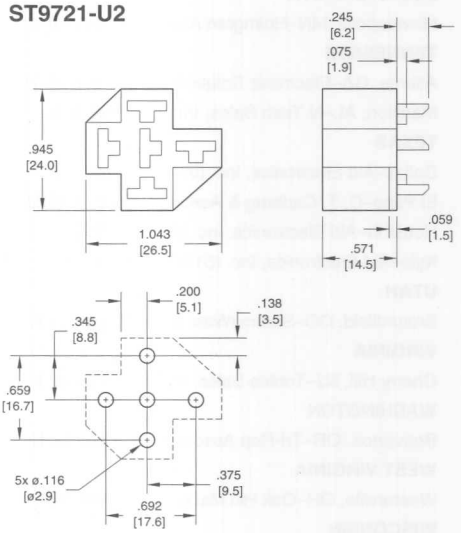
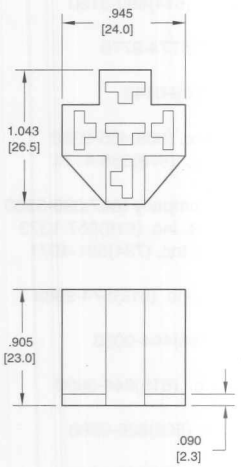


PCB LAYOUT

VIEWED TOWARDS TERMINALS

ST9721-U3



Note: Recommended receptical connector Amp Part numbers are 5-160558-9 or 5-1605-26-9

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This warranty includes, but is not limited to, those products manufactured to specifications supplied to American Zettler, Inc. by the Purchaser. Any defects appearing more than one (1) year from the date of delivery to the Purchaser shall be deemed to be due to ordinary wear and tear.

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American Zettler, Inc.'s sole responsibility, under this warranty, shall be to repair or replace, at its discretion, F.O.B. factory, any defective items received at its factory within the term of this warranty. This warranty is made on the condition that prompt notice of any defect is given to American Zettler, Inc. in writing within the warranty period, and that American Zettler, Inc.'s inspection, upon receipt of the defective items, properly packed and with transportation charges prepaid by the Purchaser, shall reveal to American Zettler, Inc.'s satisfaction that the Purchaser's claim is valid under the terms of this warranty.

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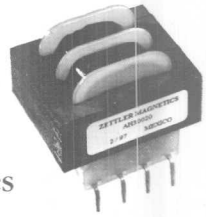
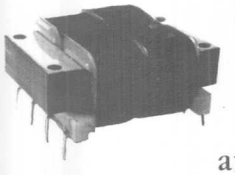


The global manufacturing and distribution facilities for Zettler Magnetics, Inc. strategically located in Mexico, France and China. Controlling the manufacturing and quality of each transformer gives assurance that our products meet the highest possible standards in the industry. In addition, a highly knowledgeable sales force works closely with an experienced applications engineering department to help define the needs of our customers and to provide optimal solutions.



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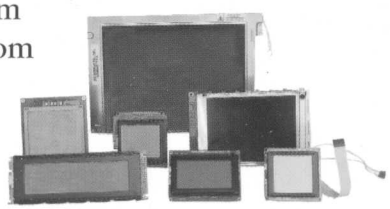

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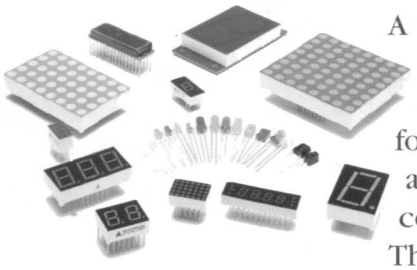

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